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BAD REPORT CARD

Cleveland State creates task force to prod PeopleSoft to fix its student administration package. Page 4

COMPAQ TAKES A HIT

And Solaris gets raves from users in *Computerworld*'s satisfaction survey on servers, operating systems. Page 70



Y2K 'DISASTER'

Reviewer, analysts call TV movie *Y2K* overblown, error-filled and fear-inducing. Page 38

COMPUTERWORLD

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NOVEMBER 22, 1999 ▪ VOL. 33 ▪ NO. 47 ▪ $4 COPY



ROB NORRIS, CIO AT Pinnacol Assurance, says the worst part was telling the CEO that "we're not weeks away from completing this [project]; we're sort of starting over"

JAY DICKEY

TO HELL AND BACK

PROJECT MANAGEMENT

SIX MONTHS BEHIND SCHEDULE on a project to build a crucial payments system, the IT team at Pinnacol Assurance was depressed. The effort was a disaster. Nothing had been delivered, and company executives were seething. The team would have to start over. But then came some "eureka" moments, reports Kathleen Melymuka. CIO Rob Norris and his team ditched Java, broke the project into modules, applied some project management discipline — and pulled the system out of what IT staffers had begun calling "the abyss."

Story begins on page 42.

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PALM WINNING HANDHELD WAR

PDA platform scores with device makers as Windows CE loses market share

BY DOMINIQUE DECKMYN
LAS VEGAS

With several vendors abandoning the Windows CE palm-size PC market, and with electronics giant Sony Corp. signing up to use Palm Computing Inc.'s platform, Microsoft Corp. appears to be losing the battle of the handhelds.

At Comdex/Fall '99 here last week, Sony announced it will license the Palm operating system for its consumer handheld devices. OmniSky Corp. in Palo Alto, Calif., demonstrated its wireless Internet service for users of the Palm V, which will debut early next year. And more than a dozen vendors showed hardware, software and information services for the Palm platform at Palm Computing's Comdex booth.

Other recent high-profile wins for Palm include Nokia Corp.'s decision last month to jointly develop cellular phones based on the Palm operating system. Vendors such as Hand-

Handhelds, page 14

More From Comdex

- Novell pushes its directory as a tool to manage business partner links. Page 12
- Linux creator: Users drive OS advances. Page 12
- Users are eager to see Bluetooth wireless standard in action. Page 14

IT A SILENT KILLER IN MERGER DEMISE

Bad planning at issue in dead hospital deal

BY CHRISTINE McGEEVER

IT botched a multimillion-dollar merger, and almost nobody noticed.

When officials at San Francisco-based UCSF Stanford Health Care announced last month that they planned to cancel the 2-year-old administrative merger of four teaching hospitals, they blamed the failure on the high cost of patient care, diminishing profits from insurance and increasing expenses for drugs, supplies and staff. Yet an audit by the state of California revealed that widespread failure in planning and implementing information technology was also a major factor in the merger's demise, a premise corroborated in interviews with IT sources involved in the merger, as well as with medical faculty and consultants.

"IT's been a disaster," said Warren Gold, professor of

Failed Merger, page 87

THE COMPLEXITY SOUND FAMILIAR?

Make room, ERP; CRM now confounds staff

BY CRAIG STEDMAN
BOSTON

AT&T Corp. spent more than $50 million to install an integrated set of applications at its new local phone operations in Texas. AlliedSignal Inc.'s aerospace group just launched its third attempt to roll out business software and is still trying to sell end users on the merits of the system.

The latest examples of big, nasty ERP projects? Wrong. What AT&T and AlliedSignal are doing involves customer relationship management sys-

CRM, page 87

MICROSOFT IS IN PENALTY PHASE

Judge's findings open the door to lawsuits

BY PATRICK THIBODEAU, KIM S. NASH AND DAVID ORENSTEIN
WASHINGTON

For Microsoft Corp., the penalties in its antitrust case are arriving well before Judge Thomas Penfield Jackson's final verdict.

Seizing on the judge's recent finding that Microsoft is an overcharging monopoly, class-action lawsuits with big damage potential are developing.

The case could also upset Microsoft's Windows 2000 release, planned for February. The government, once it has a verdict in hand, may attempt to argue that the browser has been illegally tied to the operating system and seek an injunction blocking its release, according to legal experts.

But Microsoft President

Microsoft, page 16

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Microsoft Windows 2000 Server

Microsoft Windows 2000 Advanced Server

Microsoft Windows 2000 Datacenter Server

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MIRROR, MIRROR?

Lucent claims tiny mirrors in its planned optical router can boost speeds by a factor of 16. Page 59

KEEPING THEM HAPPY

The Top 10 tactics to add to your IT hiring and retention plans. Page 48



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6 **TRAVEL WEB SITES FAIL** to satisfy most users, reports a study that rated trip-planning capabilities.

8 **NYSE AVOIDS** a meeting of alternate trading networks, planning to compete instead.

10 **COMMERCE** Department predicts that Y2K won't have a major impact on the economy.

12 **NDS EASES** Web management, claims Novell CEO Eric Schmidt at Comdex.

14 **NEW ANTIVIRUS TOOL** spots malicious code by its behavior, without having to be told about new viruses.

18 **FEDEX EXPANDS** site offerings with an online shopping marketplace.

OPINION

28 **CEOs WON'T TRUST** CIOs until they stop job-hopping and build relationships, warns CIO Dick Hudson.

29 **IT WORKERS SUFFER** dot-com envy, even though salaries are higher than ever, says David Moschella.

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39 **Y2K EXPERTS** warn companies that they shouldn't assume every glitch come January is Y2K-related.

40 **PROPERLY TRAIN** IT staffers to prevent site hacks, advises Alan Paller.

40 **SHARPER IMAGE RUNS** a tight IT ship, but the hours and benefits are good, and the office is full of cool products.

42 **AN IT DEPARTMENT** turns around a doomed project and saves money and its reputation.

46 **WOMEN** turned off by the lack of liberal arts courses in a typical IT curriculum are taking a look at Smith College's new combined program.

50 **THE NONPROFIT SECTOR** offers priceless nonmonetary rewards and the chance to work with hot technologies.

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54 **DON'T LET THE ALLURE** of e-commerce cause you to make a hasty buying decision, Joe Auer advises.

QUICKSTUDY

52 **BENCHMARKING** creates a more efficient, cost-effective IT organization.

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63 **CORPORATE USERS** like AMD's Athlon chip, but would like to see it in PCs from top-tier vendors.

EMERGING COMPANIES

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EXEC TECH

66 **ULTRAPORTABLE** speakers, sonically outstanding headphones and a — gasp! — convenient sound card.

QUICKSTUDY

67 **PROXY SERVERS** act as bodyguards, protecting client workstations from the wild, wild Web.

68 **WEB CACHING** is catching on as a way to speed the downloading of Web pages while helping to keep users from accessing forbidden Web sites.

70 **SERVER CUSTOMERS** rated Compaq lower than other hardware vendors in a *Computerworld* survey. On the server operating system side, Sun Solaris handily beat Windows NT.

FLASHBACK

74 **IN 1995,** Windows 95 caught the attention of the public. Java, meanwhile, generated the buzz in the programming world.

"THEY WANT TO CREATE A STANDARD SO THEY CAN SELL EVERYONE'S DATA PROFILES LIKE HOG BELLIES AT THE CHICAGO LIVESTOCK MART."

JEFF CHESTER, EXECUTIVE DIRECTOR OF THE CENTER FOR MEDIA EDUCATION IN WASHINGTON, ON EFFORTS BY MARKETING SOFTWARE VENDORS TO CREATE A STANDARD TO COMBINE CUSTOMER INFORMATION ACROSS MANY APPLICATIONS AND FORMATS. SEE PAGE 2.

AT DEADLINE

Truce Called in Instant Chat War

After a four-month battle, Microsoft Corp. said it would no longer seek unsolicited access to America Online Inc.'s instant messaging network.

In July, Microsoft offered MSN Messenger Service subscribers access to AOL instant messaging. AOL said the access was unauthorized. A Microsoft spokeswoman said the company will pursue an instant messaging standard.

AmEx Marketplace

American Express Co. in New York said it will develop an online business-to-business marketplace with Tradex Technologies Inc. and ec-Content Inc. The B2B Commerce Network, expected to launch in the spring, will help companies simplify their purchasing processes, help suppliers get onto the Web and connect business partners.

SHORT TAKES

An undisclosed plaintiff has filed a class-action suit against UNISYS CORP. A company spokeswoman said the systems vendor will fight claims it misled investors about its performance from May to October. . . . ESCALATE INC., an e-commere service provider backed by former NETSCAPE COMMUNICATIONS CORP. CEO Jim Barksdale and KIVA SOFTWARE CORP. founder Keng Lim, will launch next week in San Francisco. . . . IBM announced Version 2.1 of its WebSphere Payment Manager, which helps service providers link merchants to payment processors. . . . Chicago-based UNITED AIR LINES INC. said it will turn over e-mail operations for all 100,000 of its employees to USA.NET INC. in Colorado Springs . . . . INGRAM MICRO INC.'s CIO, Richard J. Kish, is leaving to join GENERAL MOTORS CORP., where he will be CIO of the E-GM division. . . . SIEBEL SYSTEMS INC. in San Mateo, Calif., agreed to buy ONTARGET INC., an Atlanta consulting firm and developer of sales training software, in a stock deal valued at $259 million. . . . Storage management vendor LEGATO SYSTEMS INC. in Palo Alto, Calif., has agreed to buy ONTRACK DATA INTERNATIONAL INC., a Minneapolis developer of data recovery software, for $134 million.

Standard in Works for Sharing E-Customer Data

Ability to easily share information alarms privacy experts, despite planned guidelines

BY STACY COLLETT

LEADING MAKERS of software for Internet marketing, tracking and analysis are working together to develop a standard for sharing personal information about online customers across different enterprise applications.

The standard, called Customer Profile Exchange (CPEX), would combine online and off-line data about customers, such as information gleaned from catalog sales, into one format. Combining the information would give online retailers an easy way to collect information about customers' backgrounds and preferences. Officials said the standard should be available in the second quarter of next year.

"Mass marketing is dead. New marketing is serving the needs of each customer as an individual," said Steven Snyder, CEO of Net Perceptions Inc., a Minneapolis firm that makes software for e-commerce marketing, and a member of the CPEX working group, which has 25 members, including Vignette Corp. in Redwood City, Calif., and net.Genesis Corp. in Cambridge, Mass.

But privacy advocates want to put the brakes on practices where online customers don't know what personal information is being recorded or who has access to it.

"They want to create a standard so they can sell everyone's data profiles like hog bellies at the Chicago livestock mart," said Jeff Chester, executive director of the Center for Media Education in Washington.

Jason Catlett, president of Junkbusters Corp., an advocacy group in Green Brook, N.J., called the standard a double-edged sword. "If built with fair practices in mind, it has the potential to make it easier for companies to adopt those practices by having them available instantly in that infrastructure. But because no standard can mandate adoption of those practices, it has the potential to do a lot more [harm] more quickly by enabling the transfer of personal data," he said.

The standard will include privacy guidelines, said Brad Husick, co-chairman of the CPEX group. "It would be naive of us to undertake this without considering privacy as a No. 1 priority," said Husick, who is also vice president of standards at Vignette.

Both the Center for Media Education and Junkbusters are calling for a ban on customer profile exchanges until the federal government establishes legal protections.

Exploratory meetings on the subject were held Nov. 8 in Washington at the Federal Trade Commission and the Department of Commerce. But it's unlikely that any legislation governing privacy rules will be passed soon, observers said. ◗

JUST THE FACTS

Sharing Profiles

What is CPEX? Customer Profile Exchange (CPEX) is an Extensible Markup Language-based software standard that would combine online and off-line data about customers into one format that can be shared among different enterprise resource planning applications.

When is it coming? The first version is expected in the second quarter of next year.

Proponents: More than 25 makers of online profiling, including Vignette Corp., Net-Perceptions Inc. and net.Genesis Corp.

Opponents: Privacy advocates who are calling for a ban on customer profile exchanges until the federal government establishes legal protections.

Legislation: Nothing pending. The Federal Trade Commission recommended a hands-off approach to Congress last summer.

Panel Weighs Privacy vs. Security

Individuals will most likely have to give up a degree of privacy on the Internet in the interest of security, according to panelists at a recent conference.

However, the panelists at the University of Virginia's E-Summit agreed that regulating privacy and security is best left to private, grassroots efforts rather than to the government.

James Sheward, CEO of Blue Bell, Pa.-based Fiberlink Communications Corp., said that just as individuals give up some privacy in the physical realm, they can expect the same in the Internet world. Consumers may someday be expected to undergo a fingerprint or eye scan before entering the online world, he predicted.

Timothy Koogle, CEO of Santa Clara, Calif.-based Yahoo Inc., said his concern is that individuals will create false identities to present information in order to manipulate the value of a stock, for example. To prevent that from happening, Web sites may need to collect more user data.

Michael McQuary, president and chief operating officer of Atlanta-based MindSpring Enterprises Inc., said he sympathizes with concerns about Internet companies that profile consumers. "Anytime somebody is revealing information about themselves, they need to be doing this in a knowing fashion," he said. "If there's full disclosure, then consumers can make rational decisions and weigh the decisions."

– *Julekha Dash*

Key XML Standards Ready

XSLT, XPath reach final phase in W3C

BY CAROL SLIWA

Two key technologies expected to help companies use Extensible Markup Language (XML) for data presentation have been completed and are ready for adoption, the World Wide Web Consortium (W3C) announced last week.

Both technologies reached "recommendation status," the final step in the W3C's process of creating Web technology.

One of the technologies — Extensible Stylesheet Language Transformation (XSLT) — assists in transforming an XML document into a restructured one. The other, XPath, is a language that lets users address pieces of an XML document.

For example, a book represented by an XML document might contain chapter headings, paragraphs and footnotes. Using an XSLT engine, the chapter headings could be transformed into a new XML document that serves as the book's table of contents.

XPath would let users associate names with each of the first three chapters, for instance, so the users can make sure those chapters are listed in the proper sequence in the table of contents, a W3C spokeswoman said.

Although XML isn't widely used, analysts said they expect the technology to be important to companies with a significant Web presence. Phil Costa, an analyst at Giga Information Group Inc. in Stamford, Conn., said XSLT could prove particularly useful for companies confronted with the problem of delivering content to end users who have different browsers.

The latest version of Microsoft Corp.'s Internet Explorer Web browser can render an XML document, but earlier versions of Explorer and Netscape Communications Corp.'s Navigator can't. XSLT could be used to transform an XML document by generating the Internet programming language HTML on the server for delivery to older browsers, Costa said. ◗



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ERP Problems Plague College

Cleveland State can't process financial aid using PeopleSoft applications

BY CRAIG STEDMAN

More than a year after it installed PeopleSoft Inc.'s student administration software, Cleveland State University continues to have big problems getting the system to work properly.

The Cleveland-based school this month created an emergency task force to prod PeopleSoft to fix its applications, which are being blamed by university officials for problems in processing financial aid, enrolling transfer students and recording grades.

Joseph Nolan, a human resources vice president who heads the new task force, said Cleveland State has identified 35 pieces of functionality that either don't work or are missing from the software. Some of the missing items are a year overdue, he added.

Although the snafus involve applications developed for universities, the experience holds lessons for corporate users who plan to install enterprise resource planning (ERP) systems.

Cleveland State started its project with the student administration applications — the most complicated piece of a higher education software suite because it encompasses things such as admissions, financial aid, class registration and student records.

> [Student administration software] just permeates the whole college.
>
> TONY DOMBROWICKI, PROJECT MANAGER, WISCONSIN TECHNICAL COLLEGE SYSTEM

The school was the first user to install a full set of PeopleSoft's student administration modules, according to a report written earlier this year by a consulting firm that worked on the project until January.

Washington-based Kaludis Consulting Group Inc. said Cleveland State also chose to do a fast-track rollout that took less than a year, a schedule described as "very demanding."

And the school stuck to that schedule even after discovering that its mainframe couldn't handle the PeopleSoft applications and would have to be replaced by a Unix system, according to the Kaludis report.

By contrast, a group of technical colleges in Wisconsin is saving the student administration software for last while getting its feet wet by installing PeopleSoft's human resources and finance applications.

Student administration "just permeates the whole college. All your departments have to get involved [in using the system]," said Tony Dombrowicki, project manager at the three-school group, which is part of the Madison, Wis.-based Wisconsin Technical College System (WTCS).

Dombrowicki's group doesn't plan to turn on the student administration modules until 2001. Even then, work-arounds will probably be needed to fill gaps in the software, he said.

PeopleSoft said it's "working closely" with Cleveland State to fix the problems there.

The company — which has sold its software to more than 400 schools — also said it has more than doubled the number of telephone support workers dedicated to the student administration software and released new documentation and installation guidelines.

But Nolan said PeopleSoft didn't promise any quick fixes during a conference call two weeks ago. More meetings are scheduled this week, but fixing the system could increase the school's $11 million budget "significantly," he added.

Meanwhile, lines of 200 students are common in the financial aid office. "We certainly don't want to go through this again next fall," Nolan said.

MCI WorldCom Details Frame-Relay Backup

BY JAMES COPE

Rebounding from the massive August outage that interrupted service to 3,000 frame-relay customers, MCI WorldCom Inc. announced last week it would deliver a frame-relay backup service and change its infrastructure development strategy to handle more traffic.

The company avoided directly attributing either of these actions to the 10 days of outage that affected an estimated 70,000 users and darkened the boards at the Chicago Board of Trade. However, it said problems that triggered the frame-relay failure — specifically, a software upgrade designed to enhance its frame-relay system for future growth — was a catalyst for some of the announcements.

The backup service, according to MCI WorldCom, will let frame-relay customers replicate the services they currently receive through their primary frame network via MCI WorldCom's other frame network. The company employs two major frame-relay systems, one from Nortel Networks and the other from Lucent Technologies Inc. Should one network experience an outage, the other would pick up the traffic.

The Lucent-based network is the one MCI WorldCom blamed for the outage. It provides services to 30% of MCI WorldCom's frame-relay customers, said analyst Brownlee Thomas at Giga Information Group Inc. in Boston.

The Nortel frame system handles 65%, and the remainder is on three frame-relay systems left over from earlier acquisitions, Thomas explained.

MCI WorldCom said replication on the backup network, which essentially is a duplicate of users' primary relay system, would cost extra. But the cost of redundancy would be one-third less than having a redundant system. MCI WorldCom didn't say how much it was spending to add the capability.

The company also announced that it would build a new frame-relay network in the first half of next year using Lucent's latest frame technology. The network will parallel the existing Lucent-based system that suffered the outage and was designed to provide the added capacity that MCI WorldCom will require for growth.

Eventually, the two Lucent frames will be integrated, probably in the third quarter of next year, the company said.

High-End Systems Vendors Offer Performance Programs

Include guarantees, purchase options

BY JAIKUMAR VIJAYAN

High-end systems vendors are rushing to offer performance guarantees, application uptime services and capacity-on-demand options that promise to make life easier for information technology shops with fast-growing applications.

Though most of the vendor programs work best under a limited set of conditions, they still provide enough value, users and analysts said.

"Often, these programs mitigate the risks" of deploying hardware for applications such as e-commerce and enterprise resource planning, said David Krauthamer, IT director at Advanced Fibre Communications Inc. in Petaluma, Calif.

For example, IBM last week announced a performance guarantee program for users running Oracle Corp.'s customer relationship management (CRM) applications on IBM's Non-Uniform Memory Access (NUMA) servers. IBM will provide free software, hardware and service upgrades up to the value of the original purchase if its servers fail to deliver agreed-upon service levels to the customer.

Rival Hewlett-Packard Co. last week announced a capacity-on-demand program under which users can buy larger servers than they currently need but only pay for the portion of it that is actually used. Sun Microsystems Inc. made an identical announcement a few weeks ago [News, Nov. 8].

IBM and HP also offer a range of high-availability programs under which they financially guarantee specified levels of application uptime.

But the programs come with caveats. The success of performance guarantees depends largely on the accuracy of information provided by customers about anticipated workloads and expected service levels. If either changes dramatically, the guarantees could become void.

And buying more than what is currently needed under capacity-on-demand programs could lock in customers to the same vendor — or outdated technology — for a long time.

Still, programs such as IBM's CRM have definite value, said Estal Fain, CIO at Ochsner Health Plan in New Orleans. "It basically takes a lot of the economic risk out of planning for scalability and performance," Fain said.

IBM's NUMA servers — Ochsner uses a 16-processor production system — provide the scalability needed for Ochsner's planned CRM application. The guarantee ensures that the company won't have to pay for any upgrades, Fain said.

Similarly, capacity-on-demand programs let users quickly add more memory, said Krauthamer. His company purchased a 3T-byte storage box from EMC Corp.



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Going There by Web Site Should Be Easier

Study: Travel sites need crisper user focus

BY STACY COLLETT

PLANNING A TRIP on the Web is far from the user-friendly, hassle-free experience promoted by online travel service providers, according to a study released last week.

Quidnunc North America Ltd., a New York-based electronic-business consulting firm, tested 24 travel request scenarios and found that some of the highest-profile travel sites scored low in understanding the needs of visitors.

"At the moment, the Internet is a great place for leisure travelers to get information, but not for planning and buying your dream holiday," said Laurence Holt, CEO at Quidnunc.

When it comes to shopping scenarios such as viewing options for hotel rooms or cars or getting detailed information about travel destinations, the top 20 U.S. travel Web sites rated low.

Wrong Base

That may be because many site developers mistakenly take existing reservation systems and build the customer experience around its capabilities or use the company's existing, nontransactional Web sites and add on e-commerce capabilities, said Julian Rawson, principal at Quidnunc.

"Neither of those work because they don't focus on why the user is visiting the site," Rawson said. "Figure out what your users are trying to do with the site. [Then] help them do that as easily as possible."

Out of a possible 48 points, Expedia.com topped the scoring with 36 points, while Infoseek's 27 points placed it at the bottom of the list. Points were allotted according to a scoring system that gave points in each of the 24 scenario categories.

Officials at Stamford, Conn.-based Priceline.com didn't put much stock in the survey.

"We survey our customers continually and have since we opened . . . in April 1998. We're finding an extremely high customer satisfaction rate," said spokesman Brian Ek.

"One of the [valid] criticisms was that we didn't recommend to people significant alternate ways . . . to save a lot of money," said Terry Jones, president of Travelocity.com, which took fourth place in the study.

More Features

However, Travelocity last week added features that in part work to address that concern. The site now offers price comparisons with flights at nearby airports and travel distances to those airports, a flight-tracking feature that lets travelers monitor arrival times and hotel mapping to compare hotel options.

Also, server capacity was increased 50%. ◗

Travel Sites Rated

Usability ratings of several online travel sites:

Travel Portals

SITE	RATING*
Expedia	36
Excite	34
AOL	34
Travelocity	31
Preview Travel	31

* Out of a possible 48 points

SOURCE: QUIDNUNC, NEW YORK

SEC Sues Vendor Over Y2K Tool

CEO defends firm; feds use software

BY LINDA ROSENCRANCE

The Securities and Exchange Commission (SEC) last week filed a lawsuit against Denver-based Accelr8 Technology Corp. and three of its executives, claiming that the firm misrepresented the capabilities of its Navig8 2000 software.

The lawsuit alleges that from 1997 through this year, the company made false statements about the use of the year 2000 bug repair tool.

The SEC alleges that although the software was created to analyze computer programs only for Digital Equipment Corp.'s VAX/VMS system, the company claimed it would also work for IBM and Microsoft Corp. products.

"This is an investigation we wrapped up very quickly, within a couple of months, because of our concerns with the Y2K problem," said Dan Shea, a spokesman at the Denver office of the SEC.

"The SEC's statements are libelous, and I'm going to sue them," said Accelr8 CEO Thomas Geimer.

Geimer said his company recently sold $412,000 worth of Navig8 software to the U.S. Department of Energy for use in Russia, Ukraine and Lithuania to help those countries make their nuclear reactors Y2K-compliant. Geimer said the software worked so well that the DOE called to thank Accelr8 for selling the department such a quality tool. ◗

Reverse Car Auctions Come to the Web

Services let buyers set a price for dealers; Ford links its site to Priceline.com bidding

BY LEE COPELAND AND LINDA ROSENCRANCE

First it was plane tickets, then ocean-bound shipping containers and secondhand goods. Now it appears even new cars are ripe for online auctions.

Last week, two auction services — Priceline.com Inc. and CarPrices.com — were launched, offering to cut haggling out of new car sales by putting the buyer in the driver's seat.

"Consumers are going online because buying a car sucks," quipped analyst James McQuivey at Forrester Research Inc. in Cambridge, Mass. "It's an adversarial process, and anytime a car buyer purchases a new car, they believe someone got the best of them. They want to know the prices up front. Consumers don't want to bargain."

JUST THE FACTS

Reverse Gear

How the CarPrices.com reverse auction works:

1. User selects make, model and options
2. Web site displays invoice and manufacturer's suggested retail price
3. User places bid
4. Dealers return bids to buyers

Using Pacific Beach, Calif.-based AutoFusion Inc.'s online reverse auction at CarPrices.com, car buyers set their own purchase prices for new vehicles with specific options. Visitors to Dearborn, Mich.-based Ford Motor Co.'s Web site have the option of linking to Priceline.com's auction to submit a bid.

Both CarPrices.com and Stamford, Conn.-based Priceline.com send their respective bids to car dealers, who in return send their best bid offers back to the buyers.

Heather Milne participated in the beta test of the CarPrices.com's reverse auction last month. Pressed for time and truck-less after her 1990 Mitsubishi Mighty Max pickup blew a head gasket, Milne placed her bid and bought a new vehicle in 48 hours. She plunked down $19,430, excluding tax, for a 2000 GMC Jimmy.

"I didn't want to haggle on the lot," Milne said. "By the time I stepped onto the lot, it was a done deal. I had nothing to do except sign the papers, so it was a painless process."

Lou Marcoccio, an industry analyst at Gartner Group Inc. in Stamford, Conn., said he expects to see a tremendous increase in Web auctions over the next six months.

"We already see auctions going into a lot of new areas, like concert ticket sales, but it will take longer to impact the car industry," he said, because most customers still want to test-drive and view the vehicles they're interested in.

But Troy Brown, customer relations and Internet manager at Hoehn Motors Inc. in Carlsbad, Calif., said he expects a steady stream of Internet car sales to flow from online auction sites. Brown said he will participate in CarPrices.com's reverse auction because the Web generates stronger leads and those sales tend to close more quickly than sales from walk-in customers.

"[Internet sales] may cut my commission, but it makes for a quick deal that flows. An Internet customer is truly looking to buy a car, but they want the best price," Brown said. "It's a mistake when sales representatives think they can make a Bill Gates fortune off of a little car."

Last week, Ford and Priceline.com began the service in Florida. CarPrices.com is initially launching its service in San Diego, where more than 80 dealers have signed up, officials said. CarPrices.com said it plans to roll the service out nationwide within the next three months. ◗

MOREONLINE

For *Computerworld* coverage of the automotive industry and related links, visit our Web site.
www.computerworld.com/more

Correction

Due to a reporting error, an Oct. 4 Technology Regional Scope feature ("Upstate New York," page 80) incorrectly stated that Crouse-Hinds will likely be relocating from the Syracuse area. It is not. *Computerworld* regrets the error.



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BRIEFS

No Fun for Dell

The detection of the FunLove virus in the production system of Dell Computer Corp.'s plant in Limerick, Ireland, is reported to have cost the company millions of dollars. According to the *Irish Times*, work at the 3,400-employee complex was suspended for at least two days while 12,000 computers were checked.

E-Business 911

New York-based Ernst & Young LLP has launched eRescue, a service for Web retailers that suffer site outages. Billed as the "retailer's equivalent of dialing 911," the service provides an Ernst & Young team that responds to a site crash with a five-day program for restoring communications with customers, suppliers and distributors.

Red Hat Buys Cygnus

Linux vendor Red Hat Software Inc. last week announced it will acquire privately held Cygnus Solutions in Sunnyvale, Calif., for $674 million, creating what Red Hat believes will be the largest open-source software company worldwide. Cygnus is a pioneer in the commercialization of open-source software and has strengths in software development tools and embedded systems.

No-Tax Bandwagon

Virginia Gov. Jim Gilmore, chairman of the congressional Internet tax advisory body, last week said he will oppose any taxes on goods and services sold over the Internet. Moreover, Gilmore said he wants to end excise taxes on local and long-distance calls, saving consumers $3.3 billion.

Compaq, C&W in App Service Venture

Compaq Computer Corp. has joined U.K.-based Cable & Wireless PLC in an application service provider deal. The companies intend to provide managed electronic-business infrastructure and services for small to medium-size businesses. The companies said they will jointly invest $500 million to fund the program.

Trading Nets Take Aim at Wall Street

At conference, network CEOs outline the challenges that lie ahead for the NYSE

BY THOMAS HOFFMAN
NEW YORK

PERHAPS IT WASN'T so coincidental that no one from the New York Stock Exchange Inc. (NYSE) was present for the first-ever gathering among the chiefs of the alternative trading networks that are gaining trading volume — and clout — along the canyons of Wall Street.

"That's how [the NYSE] has existed — ignoring what's going on around them," said Larry Lieborwitz, CEO of RediBook.com in New York.

As head of one of the nine major electronic communications networks (ECN) that handle up to 30% of the trading volume on Nasdaq Stock Market Inc.'s exchange, Lieborwitz has reason to criticize the Big Board.

Lieborwitz was among nine ECN chief executives who participated in a roundtable discussion last week at the Financial Technology Expo here. Conference organizers said the NYSE had been invited to participate but declined. A representative from Nasdaq did participate.

Courting the Big Board

Even though ECNs don't currently handle stock trades that occur through the NYSE — most of their orders are institutional trades conducted over Nasdaq — some of them, like Chicago-based Archipelago LLC, plan to handle orders for Big Board stocks.

Because ECNs offer cheaper and faster trade execution than traditional stock exchanges, markets such as the NYSE are "going to be challenged to execute trades more efficiently and economically," said Omar Amanat, CEO of Tradescape.com in New York.



AMANAT: Traditional markets face challenge

Two weeks ago, NYSE Chairman Richard Grasso announced plans for the exchange to launch its own ECN within the next six months to handle electronic trades of up to 1,000 shares. Nasdaq, in a bid to go global, said it plans to create electronic stock exchanges in Japan and Europe with links to its U.S.-based electronic market.

But some people on Wall Street say those moves don't go far enough to meet investors' demands.

Investors will drive the NYSE and other markets to accept even more electronic trading volume, said Marty Lippert, CIO at Royal Bank of Canada in Montreal. Lippert spoke at a separate conference session.

Arthur Levitt, chairman of the Securities and Exchange Commission (SEC), recently called on the major stock exchanges to create a universal electronic marketplace that would link a variety of investors and dealers. Most of the roundtable participants agreed, though they said that improvements in the costs and speeds of executing transactions would be necessary for the mainstay exchanges to fill that role.

Still, many experts say several factors will further reshape the financial markets over the coming years, including the consolidation of nine ECNs into two or three networks. Plus, market regulators such as the SEC are expected to monitor and regulate ECNs more closely than they have, perhaps with new regulations introduced next year. ◗

At Show, Oracle Preaches System Gospel

But attendees go for point products

BY ROBIN ROBINSON
LOS ANGELES

Oracle Corp.'s message to the masses at its Open World conference here last week was about its strategy to get users to buy its integrated package of applications, databases and development tools.

But attendees disregarded Oracle's advice and continued to seek point-products rather than overarching technology.

CEO Larry Ellison criticized the best-of-breed concept used by firms to assemble systems and applications from among vendors in each category.

He said the concept causes complications as companies try to tie together the various applications, databases and tools and is responsible for the information technology labor shortage and sky-high implementation budgets.

Oracle's goal, Ellison said, is to deliver a complete package of applications from enterprise resource planning to business intelligence. "I personally believe the system approach is much better than the component approach," Ellison said.

Users said they were interested in particular products.

Dave Hansen, a programmer at Lincoln Benefit Life Co. in Lincoln, Neb., was most impressed by Oracle's WebDB, designed to be used for rapid deployment of relatively unsophisticated applications and to construct unique ad hoc reports in conjunction with Oracle Application Server. And Chris Loud, a developer at Sprint Paranet, a business unit of Sprint Corp., was intrigued by a session in which the new Extensible Markup Language tools in Oracle8i were discussed.

Ellison also unveiled the improved $199 network computer.

Four years ago, Ellison started Network Computer Inc. — now called Liberate Technologies in San Carlos, Calif. — and focused on handheld devices. This time around, a new Network Computer Inc. is selling a network computer that includes a CD-ROM drive, a 400-MHz processor and a browser and uses the Linux operating system. The package includes a CD-ROM with the StarOffice office automation suite. It's expected to ship in the first quarter of 2000.

Anthony Speed, president of the Australian Oracle User Group, was concerned there would be too much attention on the network computer and too little on e-commerce.

"The key question is, what is e-business going to do to me if I don't do it?" Speed said. "People are moving to the Internet model, but it takes time and depends on what your legacy systems are." ◗

Oracle Opens Up Unix Market

Oracle and IBM announced at Oracle Open World that Oracle Internet Directory will be offered as an option within Monterey/64, the Unix operating system being developed in a joint effort between IBM and The Santa Cruz Operation Inc.

Oracle's announcement opens the Unix market to users, whether they're currently running IBM's DB2 or Oracle's 8 or 8i databases, said Miles Barel, IBM's program director for Unix marketing. Prior to the announcement, only IBM's Secure Way Directory was offered.

Monterey/64 will run on Intel Corp.'s IA-64 processor, currently in development, and on Intel's IA-32 processor and IBM's PowerProcessor.

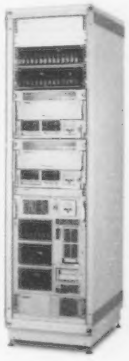
The directories for Monterey/64 are expected to be available by the middle of next year, when the IA-64 chip, officially named the Itanium, is slated for delivery. – *Robin Robinson*



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U.S. Assesses Y2K Cost, Economic Impact

BY PATRICK THIBODEAU
WASHINGTON

The U.S. Commerce Department said last week that the Y2K problem won't hurt overall economic growth but that it has been expensive to repair — with a cost that is certain to reach $100 billion and may be as high as $114 billion.

Despite Y2K's staggering cost — estimated at $365 for every man, woman and child in the U.S. — information technology managers say the effort to repair the problem has left U.S. firms better off.

Commerce officials say Y2K spending has passed its peak and companies will now be shifting IT resources to new projects. "The greatest cost to our economy is behind us," said Commerce Secretary William Daley.

Those costly Y2K projects have forced companies "to update and re-engineer all of their hardware and software systems, and any time you do that you are always better prepared for the future," said Jon Schafer, division manager of Internet and information technology at Slack Inc., a medical publisher in Thorofare, N.J.

Improvements forced by Y2K may lead to future savings, said Mary Weddig, the year 2000 manager at Budget Group Inc. in Daytona Beach, Fla., the company that runs Budget Rent a Car.

"It helped us to get a more consistent network infrastructure," said Weddig. Those changes should make it easier and less expensive for Budget to integrate new technologies into its infrastructure, she said.

The business sectors most prepared for Y2K are those that provide critical services such as energy, finance, telecommunications and transportation. Less prepared are health care, small business and education. "It will be surprising if Y2K problems in these areas do not make some news in early January," said Daley.

While Y2K isn't expected to affect overall U.S. growth for this year and next, it could influence the pattern and timing of this growth, especially if companies increase their year-end purchases to build inventories, said Robert J. Shapiro, the Commerce Department's undersecretary for economic affairs. If that happens, the effect of that buying could be offset in the first quarter of next year.

The nation's major foreign trading partners "are generally as well prepared as we are," said Shapiro. Moreover, a considerable proportion of U.S. trade occurs among and within multinational firms, "which have very strong incentives to keep their supply lines operating," he said.

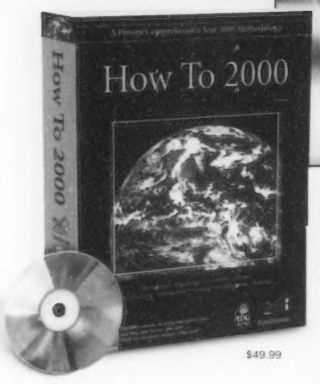
But the government assessment on foreign activities may not be justified, said Ann Coffou, an analyst at Giga Information Group Inc. in Norwell, Mass. "It's certainly better than it was three months ago," she said. "But I still think that's the Achilles' heel — that's definitely the area that can cause the problems."

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blah blah blah

Novell Casts NDS as Web Relationship Manager

CNN agrees, deploying directory services to deliver personalized Web content

BY DAVID ORENSTEIN

NOVELL INC. CEO Eric Schmidt last week implored users at Comdex to consider Novell Directory Services (NDS) as the basis for managing relationships on the Web. Indeed, some users are already beginning to think that way.

The company is now shipping NDS Corporate Edition, which includes tools to integrate various network resources under NDS. Schmidt also announced the availability of Novell Directory Services 8 for Solaris and Windows NT and previewed new interoperability features in the next version of NDS, due next year.

Directories are specialized, database-driven tools used to manage users, customers, devices or other network and Internet objects. Schmidt wants users to apply NDS to building and managing Internet-based relationships that are based on the intimate knowledge about business partners and customers that NDS can store.

Cable News Network (CNN) is rolling out NDS 8 on NetWare to deliver customized content and targeted advertising to millions of Web users, said Monty Mullig, vice president of Internet technology at the Atlanta-based broadcaster. CNN is a business partner of International Data Group, which owns *Computerworld*.

Mullig said NDS will provide the high performance and scale CNN needs as it continues to grow from a projected 3 million users early next year to as many as 10 million by year's end. In its role as a data server, NDS's performance is crucial because the personalized content a user has requested must pop up about as quickly as generic content would.

The ability to tailor ads will bring in revenue in two ways: CNN can earn a premium for delivering particular demographics to advertisers, and it can also sell such targeted ads to companies that would otherwise not buy ads.

Future Changes

The next version of NDS will use standard domain name services technology so businesses can connect to one another's Lightweight Directory Access Protocol directories, Schmidt said. He also said DirXML, which uses Extensible Markup Language (XML), will be able to feed NDS data from sources that don't have awareness of directories.

The chance to share directory information and enhance relationships with business partners by personalizing Web sites intrigued William Lazo, a senior network planner at a major financial services company in the mid-Atlantic region: "I have always been a pretty big believer in NDS. I think it's definitely something we're going to take a look at."

Schmidt also pledged to make NDS 8 available on Linux. Jamie Lewis, an analyst at The Burton Group in Midvale, Utah, said Novell is delivering on its claims that NDS is a platform-independent tool. "That's a big step for Novell," he said.

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For resources related to Novell, such as articles and books, visit our Web site.
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Gates Also Envisions Personal Web

Microsoft also sees the future in a more personalized Internet, according to Bill Gates' Comdex keynote address.

Microsoft Corp.'s chairman said the company will make the Web personalized with rich content, such as streaming media and easily integratable and programmable services based on XML.

Gates positioned Windows 2000 and the BizTalk XML server as engines that will drive Web sites, offering users a variety of software-based services.

Microsoft demonstrated a sample Web-based trip-planning application that not only routed the user from Las Vegas to Seattle, but also calculated when the user's Ford would run out of gas, found gas stations and imported prices from those stations.

Microsoft's vision is maturing exactly the way businesses need it to, said Harvey Schaerer, manager of information systems at Biomira Inc., a biotechnology firm in Edmonton, Alberta. "The things he was showing us – there's no way we could do that in our shop [yet]," Schaerer said. "But . . . our users are going to force us to be there." – *David Orenstein*

Comdex Sound Bites



"There is no operating system industry, there is no application industry, it's all going for free."
– Scott McNealy, Sun Microsystems Inc.'s chairman and CEO, who said the company's Community Source License system makes noncommercial use of Solaris and Java free



"The thing that's slowing down our momentum in any market right now is our ability to educate our employees quickly. Electronic learning is too important, the payback too large, for corporations to ignore it."
– John Chambers, president and CEO of Cisco Systems Inc.

"What users want is really starting to show up on the radar."
– Linux creator Linus Torvalds on how user demands have taken over in guiding the operating system's development





"Somewhere along the way we stopped talking about invention. We will start talking again."
– Carly Fiorina, four-month president and CEO of Hewlett-Packard Co., citing a return to the company's roots: innovative engineering

Linux Creator Credits Users

Says their wants are fueling development

BY DAVID ORENSTEIN
LAS VEGAS

Linux creator Linus Torvalds told a Comdex audience of thousands last week that user demands rather than purely technological interests have begun to drive the development of the free, open-source operating system.

"Users and what users want are really starting to show up on the radar," he said. He cited how Linux's graphical interfaces have emphasized ease of use and even sought to mimic Windows to flatten the learning curve for new users.

Ottawa-based Corel Corp. unveiled a Windows-like version of Linux at Comdex. Competitor Caldera Systems Inc. in Orem, Utah, announced its eServer product, emphasizing ease of administration over the Web. Meanwhile, Islandia, N.Y.-based Computer Associates International Inc. announced antivirus software for Linux, and Redwood City, Calif.-based Check Point Software Technologies Ltd. announced that it will provide virtual private network software for the Linux platform.

"People want convenience," Torvalds said. Convenience is motivating developers to improve Linux's power management to support wireless devices. Users also want power, which Torvalds said is keeping him focused on delivering a new version of Linux's kernel, Version 2.4, with support for eight or more processors and a higher limit on memory.

Analyst Bill Peterson at International Data Corp. in Framingham, Mass., said users are already finding a lot to like in Linux. Preliminary results from the firm's third annual survey of Linux use shows that adoption of the operating system continues to grow very quickly and that it is now installed for much more than the 13.5% of users who reported Linux installations a year ago.

As vendors have sought to build that market, they have begun to add technology and tinker with Linux's kernel. But Torvalds said he was heartened rather than worried that vendors are looking to bring capabilities such as clustering to Linux. Diverging development versions of Linux, called forks, are natural, he said.

Scott Lee, a systems administrator at Texas Life Insurance Co. in Waco, Texas, said he was pleased to hear Torvalds emphasize improving Linux's multiprocessor support and endorse a variety of distributions. The company uses Linux to run Netscape browsers for all its employees who are equipped with thin clients, Lee said. Texas Life runs multiple distributions of Linux. "Each different product adds a little bit different features," he said.

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Slow Start for New Wireless Standard

Lack of vendor support delays Bluetooth

BY DOMINIQUE DECKMYN

USERS who juggle wireless devices such as cellular phones, pagers and handheld computers are eager to get their hands on Bluetooth. But the technology, announced last year, is taking longer than expected to get to market, and it will be two more years before it really takes off, analysts said.

Bluetooth is a standard for short-distance wireless communications, connecting devices at speeds up to 1G bit/sec. and distances up to 10 meters.

Only a handful of working prototypes were shown at a Bluetooth pavilion at Comdex last week. Sweden's Ericsson Mobile Communications AB, a driving force behind Bluetooth, demonstrated a wireless handset for cellular phones. Port Washington, N.Y.-based TDK USA Corp. demonstrated a Bluetooth PC Card that's likely to ship by June for $100.

"Maybe the expectations on timing have been unrealistic," said Gerry Purdy, president and CEO of Mobile Insights Inc. in Mountain View, Calif.

WIRELESS UPDATE

Bluetooth is also being held back because neither 3Com Corp., the maker of the Palm, nor Microsoft Corp., which develops Windows CE, has endorsed it.

"It's curious to me why they are not taking more of a leadership role," Purdy said. Officials from Microsoft and 3Com's Palm division who were at Comdex said they're watching the technology but made no commitments to support it.

Some Palm users are more enthusiastic. One visitor to the Bluetooth pavilion carried an Iridium LLC satellite pager, a Motorola Inc. StarTAC phone and a 3Com Palm on his belt. "Bluetooth would mean I could actually link my Palm to useful information all the time," said Harko Schwartz, president of NCME Inc., a systems integrator in Philadelphia.

"I don't know a lot about Bluetooth, but I'd be interested in testing it for use for meeting situations," said Steven Benda, an information systems support team leader at Deere & Co. in Moline, Ill.

Purdy said Bluetooth will turn up in handheld computers, cell phones and laptops in a year and will be pervasive by late 2001. ◗

Staff writer Matt Hamblen contributed to this story.

Continued from page 1

Handhelds

spring Inc. in Mountain View, Calif., and TRG Products Inc. in Des Moines, Iowa, have also launched Palm operating system devices.

"Palm is doing all the right things," said David Hayden, an analyst at Mobile Insights Inc. in Mountain View, Calif.

Meanwhile, Windows CE is falling behind.

Market research firm The NPD Group Inc. reports that 3Com Corp., parent company of Palm Computing, held 78% of the U.S. market for personal digital assistants (PDA) in the third quarter, up from 76% the same period a year ago. Devices running Windows CE fell to 15% of the market, down from 22% the year before.

The CE platform has been hit by some high-profile desertions, with Royal Philips Electronics in the Netherlands and Everex Systems Inc. in Fremont, Calif., abandoning the palm-size PC market.



A HOT TOPIC is Handspring's Visor, a Palm OS device

Those desertions don't weaken the Windows CE platform, said Brian Shafer, marketing manager at Microsoft's productivity appliances division. "Between Compaq [Computer Corp.], Casio [Computer Co.] and Hewlett-Packard [Co.], we feel we have fairly good coverage," Shafer said.

Windows CE devices have been hobbled by limited battery life and an operating system that isn't simple and stable enough, said Jill House, an analyst at International Data Corp. in Framingham, Mass.

"I've had the Windows CE devices, and they're terrible," said Harko Schwartz, president of systems integrator NCME Inc. in Philadelphia, who now owns a Palm device. He said he could lose valuable customer information when a CE device's batteries run out.

However, corporations eager to develop complex applications for handheld devices may opt for CE's richer platform and popular development tools such as Visual Basic, said House. And Windows CE might see a revival if users start demanding multimedia capabilities and better Internet access, she said.

An update to Windows CE, expected in the first half of next year, is likely to help the platform, Hayden said. It will feature enhancements for the real-time and embedded markets, an area in which CE's fortunes seem brighter.

CE also is the operating system for subnotebook devices from vendors like Compaq, as well as for the Web Companion, the low-price Internet access device Microsoft CEO Bill Gates introduced in his keynote last week.

"Palm OS is a great, efficient OS for an organizer. As soon as you want to do more, like browsing, it loses steam, and CE really shines," said Shafer.

But in a panel discussion at Comdex last week, Palm Computing President Alan Kessler suggested that simplicity is a virtue. "The success [of the Palm] was not in what we put into the device," he said, "but in what we left out."

Many users are starting to look beyond the Palm's basic organizer features. At Internet security firm Hyperon Consulting in Lee's Summit, Mo., one employee bought a Palm about a year ago, and "it took the company by storm," said William Molini, director of sales. At Comdex, Molini was looking at software from Irvine, Calif.-based Walletware Inc. that would allow mobile workers to file their expense reports from their Palms while they're on the road.

Palm Leads the Pack

PDA market share, by operating system:

	Q3 1998	Q3 1999
Palm OS	76.4%	77.8%
Windows CE	21.6%	15%
Others	2%	7.2%

* Based on U.S. unit sales of PDAs

SOURCE: THE NPD GROUP INC., PORT WASHINGTON, N.Y.

Wisconsin Public Service Corp. currently has users of multiple handheld systems, but the information technology department isn't supporting any of them, said Steve Mitchell, a senior systems analyst at the utility in Green Bay. The company is telling employees to contact IT before acquiring a PDA, but it hasn't yet decided whether it will go with Palm or Windows CE. "We don't want to support multiple platforms," Mitchell said. ◗

Staff writer Matt Hamblen contributed to this story.

New Tool Hunts, Kills Viruses

BY ANN HARRISON

Most antivirus software simply protects against known attack methods rather than proactively defending against new ones. At many companies, the damage from Trojan horse programs has already occurred by the time vendors are able to release a new patch.

SurfinShield Corporate software, released this month by Finjan Software Inc. in San Jose, scans program behavior and automatically destroys any Trojan executable, Java or ActiveX program that violates a company's predetermined security policy.

According to Finjan, SurfinShield Corporate was also designed to plug security holes in instant messaging programs, including America Online Inc.'s Instant Messenger, Yahoo Inc.'s Yahoo Messenger, Tribal Voice's PowWow and Microsoft Corp.'s MSN Messenger Service. Those programs have been the targets of Trojan executables that steal passwords and spread quickly.

SurfinShield Corporate also prevents any audio or video from being sent from a PC through a network connection without the user's knowledge.

Alex Vakman, a systems security officer at HSBC Securities Inc. in New York, said he's concerned about dangerous Trojan programs and malicious executable code delivered via Web browsers. He said his company uses Finjan's SurfinGate on a server to block malicious code at the gateway level. SurfinShield, installed on the desktop, would help screen out encrypted malicious programs at companies willing to manage the tool, Vakman said.

Vakman said he appreciates the granularity of Finjan products that allow systems administrators to permit select executables and certain traffic. "You are able to control which software you trust and which software you don't trust," Vakman said.

SurfinShield Corporate 4.7 starts at $59 per user. The SurfinShield client module is available for free at Finjan's Web site (*www.finjan.com*). ◗



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BRIEFS

Gore Visits Microsoft

Vice President Al Gore took his presidential campaign to Microsoft Corp., and employees at the Redmond, Wash., campus took their consternation over the government's antitrust case right to him. Gore declined to comment on the case, but he did express support for enforcement of U.S. antitrust law, calling marketplace competition "a fundamental American value."

Get Back to School

The University of Pennsylvania's Wharton School of Business in Philadelphia announced a new MBA major titled Managing Electronic Commerce to help cut dropout rates. About 25 of the school's 765 students chose to join Internet start-ups this fall rather than return for their second year. That's a 400% increase in students leaving the school.

HP Beats Street

Hewlett-Packard Co. announced better-than-expected results after twice warning investors of the possibility of a weak quarter. Last week, HP revealed profits of $760 million on $11.4 billion in revenue for its fiscal fourth quarter. That's compared with profits of $759 million on $10.3 billion in revenue for the same period last year. This year, HP had $42.4 billion in revenue – up 7% from 1998. Profits rose 16%, to $3.1 billion.

CA Protects Linux

Computer Associates International Inc. in Islandia, N.Y., announced a Linux version of its InoculateIT antivirus product last week. It was designed to protect Linux machines from a variety of viruses, including Internet worms and macro viruses.

Short Takes

MICROSOFT CORP. last week posted a hot fix at *http://support.microsoft.com/support/kb/articles/Q245/6/78.asp* to patch a problem in Service Pack 6 for Windows NT 4.0. . . . SOTHEBY'S HOLDINGS INC. in New York and AMAZON.COM INC. launched *http://sothebys.amazon.com*, with 6,000 items up for bid.

Spectrum Adds Tools For Cisco Devices

Cabletron spin-off increases line of modules that manage network hardware

BY SAMI LAIS

FOUR MONTHS after spinning off from Cabletron Systems Inc., Spectrum last week announced several new management modules for network hardware from Cisco Systems Inc. in San Jose.

Spectrum tools have long been used in multivendor environments, and the Durham, N.H.-based company claims to manage hardware from 140 vendors.

Spectrum's strength as a network hardware management tool has been its "scalability, cohesive intelligence and automation across management functions," said Dennis Drogseth, an analyst at Enterprise Management Associates, a consultancy in Boulder, Colo.

What's really new, Drogseth said, "is the level of visibility" the announcement has been given. That visibility is a positive signal to users, he added. "One issue Spectrum had [under Cabletron] was that working with other hardware vendors — Cabletron's competitors — required a greater level of communication, and Cabletron wasn't willing to do it."

The new modules for Cisco's Access Server, Catalyst 1200, 1400 and 2900 series and the Cisco 3810 are additions to a list of existing Cisco hardware modules. That includes the Catalyst 5000, 5500 and Lightstream 1010 series. Existing modules will also be upgraded to include greater device management capabilities, including greater fault tolerance.

Texas Instruments Inc. runs a mixed Cabletron and Cisco network connecting 24 servers worldwide. Some functions are managed locally, while others are handled from a central server in TI's Dallas headquarters. The company uses Spectrum with tools from BMC Software Inc. in Houston to manage its network and is considering adding Cisco 2900 routers and additional Access servers. The new Cisco support will be welcome, said Jim Pye, a TI systems analyst.

During the past two years, Spectrum tools have made significant advances in managing a multivendor environment, Pye said. But now he's looking for detailed Web-browser accessible graphical and textual reports, troubleshooting and alarm management.

A new version of Spectrum's Web browser-accessible Alarm Manager for greater reporting and fault management is due in two weeks. Spectrum is also working on expanded capabilities for network hardware from 3Com Corp. ◗

Continued from page 1

Microsoft

Steve Ballmer said the government won't force the company to split the browser from the operating system.

"We don't expect that to happen," Ballmer said last week at Comdex/Fall '99. "We've gone through that process once before, and the appellate court upheld our ability and right to integrate additional value for our customers."

Last May, an appeals court overturned an injunction that would have barred Microsoft from forcing PC makers to take Internet Explorer along with Windows.

Microsoft isn't preparing any backup plans for Windows 2000, Ballmer said. But Microsoft probably wouldn't admit to having a backup plan anyway, said Rich Gray, an antitrust lawyer in San Jose. Not only would that suggest that Microsoft thought it was doing something wrong, Gray said, but talking about a fallback position could interfere with potential settlement talks.

Microsoft Chairman and CEO Bill Gates said on ABC's *Good Morning America* program last week that he was serious about reaching a resolution in the case. But settlement prospects remain "unknown," said one government attorney, following a meeting with Jackson and Microsoft attorneys on Thursday at U.S. District Court.

Government and Microsoft attorneys met for the first time last week since Jackson's Nov. 5 pro-government findings of fact to schedule final trial activities. It was agreed that both sides would be back in court to give oral arguments before a final verdict is released early next year.

With a verdict against Microsoft all but certain, government attorneys are preparing for the remedy phase of the trial. "We're still working hard on that," said Iowa Attorney General Tom Miller after last week's meeting with the judge. "Neither [state nor federal officials] have really decided exactly what the best remedy is for the consumer interest."

But Miller said he expected that the states and the federal government would reach a strong consensus on a remedy. "Look at how the trial has gone. The Justice Department and the states have been in concert on every issue, and we anticipate this will not be an exception," said Miller.

While the government mulls over remedies in this case, Microsoft attorneys are preparing for a new round of antitrust-related lawsuits that have been spurred by the judge's finding that the company is a monopoly.

Antitrust Fallout

Two of the antitrust lawsuits filed against Microsoft days after Jackson's findings charge that the vendor overcharged Windows users. They both seek class-action status.

PLAINTIFF	WHERE FILED	MICROSOFT RESPONSE
Blaine Cox	Birmingham, Ala., federal court	Both suits are "baseless, groundless," and "they are bad for the high-tech industry, American economy and consumers"
Seastrom Associates Ltd.	New York state supreme court	

In a federal suit, Blaine Cox, a PC user in Birmingham, Ala., has claimed that he and other consumers were overcharged $10 to $40 every time they bought Microsoft software. Cox wants that money back, as well as triple damages.

The figures are based on an internal study Microsoft did to figure out how to price Windows. The study, which Jackson cited in his Nov. 5 ruling, said Microsoft could charge $49 for the product; it ultimately charged $89.

What prompted the suit? "The ruling, of course," said Cox's lawyer, Bob Roden, an attorney at the firm Shelby & Cartee LLC in Birmingham.

Roden hopes to turn Cox's suit into a class action and said he has had calls from other consumers. But no one has joined Cox yet.

Seastrom Associates Ltd., a New York advertising company, also filed an antitrust suit against Microsoft just days after Jackson's findings. Seastrom, which is seeking to have other companies and individuals join it in a class-action suit, claims that Microsoft has consistently overcharged for Windows.

And two PC users in Louisiana filed suit in federal court in New Orleans. Jay Quigley and John Redmann also seek class-action status.

"These are baseless, groundless lawsuits. We consistently charge lower prices for Windows than our competitors do for their operating systems," a Microsoft spokesman said.

If the antitrust case ends up delaying Windows 2000, Bill Pantely, information systems director at Spancrete Industries Inc. in Waukesha, Wis., said it won't bother him.

The building materials maker doesn't plan to look at Windows 2000 until August, and Pantely said Microsoft could fend off an injunction. ◗

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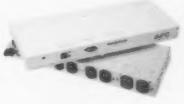
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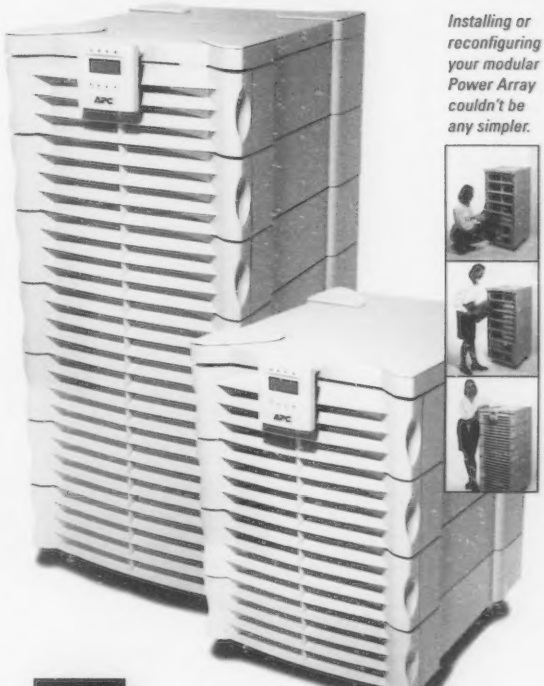
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FedEx Creates Online Shopping Marketplace

Analysts' reactions mixed to shipping company's venture into e-commerce

BY LINDA ROSENCRANCE

SHIPPING GIANT Federal Express Corp. has gone from online shipping to online shopping with the launch of its FedEx MarketPlace.

The marketplace gives consumers one-click access to several online merchants that use FedEx to deliver their goods. Merchants participating so far are Value America Inc., Hewlett-Packard Co. and L. L. Bean Inc.

FedEx isn't the only nonretail company that's looking to retail partners to develop marketplaces and offer customers more services. 3M Co., for example, is launching an online showroom (see Business section story, page 39.

FedEx refused to release any details of its partnerships. Analyst reaction to this latest e-commerce move was mixed.

John Fontanella, an analyst at AMR Research Inc. in Boston, said FedEx's arrangement is beneficial for all parties involved.

"FedEx gets a lot of eyeballs on that site — people who are doing business, tracking or shipping [packages]," he said. "This is an interesting collaboration. It allows FedEx to introduce its users [who are tracking a package online] to its biggest customers."

But Mike Bernstein, an analyst at Gartner Group Inc. in Stamford, Conn., said he's not sure exactly how FedEx or the consumer will benefit from these partnerships.

"This seems like a questionable strategy to me," Bernstein said. "This is not a major new phase in FedEx's life. I look at it from a consumer perspective. If I'm going to buy a shirt, why would I go to FedEx? FedEx is just trying to help out its business partners."

Customer Showcase

FedEx spokeswoman Sally Davenport said the shopping portal was a way for the company to showcase its customers as well as another way to support and encourage e-commerce. She said FedEx is "actively looking" for additional merchants to join the FedEx MarketPlace.

At FedEx rival United Parcel Service of America Inc. in Atlanta, spokeswoman Angela McMahon said she didn't feel comfortable commenting on FedEx's new strategy. She also said she couldn't say whether UPS was going to use a similar strategy in the future but added that it wasn't doing so now.

Visitors to the FedEx site can click on the FedEx MarketPlace link on the company's home page and connect to Charlotte, Va.-based Value America, which offers 3,000 brands and 30 product categories; the HP Shopping Village, the e-commerce site of Palo Alto, Calif.-based HP; and the site of Freeport, Maine-based L. L. Bean, which sells clothing, travel gear and home furnishings.

JUST THE FACTS

FedEx Adds Shopping To Shipping

Participants in the FedEx Marketplace include:

- **Value America:** 3,000 brands, 30 product categories
- **HP Shopping Village:** Consumer e-commerce site of Hewlett-Packard products
- **L. L. Bean:** Clothing, travel gear and home furnishings

Big Rig Services Go Online

Volvo puts customer service apps on Web

BY LEE COPELAND

Volvo Trucks North America Inc. said it plans to revamp the services it sells to big rig and heavy-equipment customers by using Web and wireless technology. The truck maker hopes to promote full-service leasing through the new Web amenities.

The Greensboro, N.C.-based company plans to launch an international customer service network that will give its service representatives a better view into the repair and service needs of vehicle owners.

"What we're trying to do is sell a logistics solution, instead of just a hunk of metal," said Joost de Vries, vice president at Volvo Action Service. "We want an immediate and better view into our customers. It is much better to cater to their needs instead of what we think they need."

The system is based on customer relationship tools from Industri-Matematik International Corp. in Stockholm and a telecommunications system from L. M. Ericsson Telephone Co. in New York. The system will link call centers in North America, Europe and Brazil.

Volvo is also custom-building a configuration system to augment what it offers. The Web configurator will let customers select from thousands of vehicle options.

Last year, Volvo shed its automotive business to focus on trucks, buses and marine and construction equipment. De Vries said he believes the premium services set the company apart from its competitors.

Similar to Detroit-based General Motors Corp.'s OnStar service, Volvo trucks include global-positioning technology, which will let the call centers identify engine problems for drivers. Because each truck is custom-made, the centers have detailed data on parts, warranty and equipment packages.

Customers would pay a monthly fee for the service.

"In the heavy-truck industry, what's needed is to have a continual view of the status of a vehicle and to provide service to customers on the road," said Steve Cole, an analyst at Forrester Research Inc. in Cambridge, Mass. "If there is a crisis for the driver, with good customer relationship management software in place, Volvo can respond a lot quicker. They already know the configuration of each vehicle and they understand the repair history."

One analyst said Volvo is leading the trucking industry with its online endeavors.

"It's a different approach, and Volvo is the first to do it," said Dennis Virag, president of Automotive Consulting Group Inc., a market research firm in Ann Arbor, Mich.

Volvo hopes to have its system operational by April and plans to launch the configuration tool in February. Volvo wouldn't disclose costs, but de Vries said the projects ran "well into six figures."



Volvo Services For Truckers

VOLVO ACTION SERVICE

- An international call center network linked to electronic engine monitoring tools and offering emergency services and roadside repairs.
- Linked call centers in Ghent, Belgium; Warwick, England; Toronto; Curitiba, Brazil; and Greensboro, N.C.
- Launch date: April 2000

ONLINE CUSTOM TRUCK CONFIGURATION

- A dealer service for customers
- Launch date: February 2000

HP Upgrades VirtualVault

BY ANN HARRISON

Answering the call for security products that support multiple platforms and Web-based applications from a variety of vendors, Hewlett-Packard Co. announced an upgrade to its flagship HP Praesidium VirtualVault Web server platform.

Version 4.0, which will be available next month, secures a wider range of applications and enterprise server platforms. Based on the HP-UX 11.00 environment, VirtualVault 4.0 was designed to protect e-commerce applications from tools made by Ariba Inc., Oracle Corp. and SAP AG and others that use threads, streams and 64-bit architectures.

Electric Lightwave Inc., a Vancouver, Wash.-based communications services provider, deployed three VirtualVault 4.0 systems in two weeks to improve the productivity of its sales force. Working with MetaSolv Software Inc.'s Telecom Business Solution product, Oracle Web servers and Oracle RDBMS, the system enabled real-time access to transactional data and saved millions by eliminating the need for additional security.

"HP VirtualVault is the delivery mechanism that allows me to deploy a very strategic set of applications at a fairly low cost and at a very low risk," said company vice president and CIO Steve Adkins in a statement.

VirtualVault 4.0 offers a mirror-disk option that maintains up to three copies of data on a single disk. The product also includes tools to simplify the integration of the secure front end and an HTTP Web protocol gateway that allows for browser access through a protected bridge.

With the optional Patrol SafePassage tool for VirtualVault, designed by Houston-based BMC Software Inc., Version 4.0 protects Web applications on servers from Sun Microsystems Inc., Microsoft Corp., Compaq Computer Corp., IBM and HP "five nines" (99.999% availability) servers.

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- Peter Nikonowitsch, Engineering Manager, Hitachi Semiconductor

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With the rise of the Internet, there has been some speculation as to the role Microsoft will play.

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* Netcraft Survey (September 1999)

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Industry to Play Crucial Role in Y2K Assessments

Voluntary networks will keep U.S. officials and colleagues abreast of developments

BY PATRICK THIBODEAU
WASHINGTON

COMPANIES operating the nation's key infrastructures — finance, utilities and transportation — will play an unprecedented role over New Year's weekend in helping the White House collect and assess Y2K incident reports.

These companies have formed extensive, voluntary networks through their respective industry trade associations to share information about year 2000 incidents and system problems, according to trade association and government officials.

Their purpose is twofold. The industry networks will keep the White House posted on the status of their respective industries. But Y2K information will also be shared among participating companies, giving information technology managers a heads-up to potential Y2K-related system problems and fixes.

For instance, U.S. government and private-sector officials will be eagerly watching whether U.S. oil firms operating in New Zealand — one of the first regions to see the new year, at 7 a.m. Eastern Standard Time Dec. 31 — will be affected by the date change.

Firms operating in this region will share technical data about their systems — along with reports of any Y2K disruptions outside their gates, such as power failures — with oil industry experts stationed at a desk at the U.S. Department of Energy.

"For our members, what goes on in Australia and New Zealand is just as relevant as anything that happens to their assets here in the U.S.," said Kendra Martin, CIO and Y2K project director at the American Petroleum Institute in Washington, which is spearheading the oil industry's data-collection effort.

This data will be shared with other companies, but it will also be analyzed for trends that may reveal Y2K anomalies, said Martin. Oil industry and other trade groups will send this information, along with an assessment as to whether it will affect consumers, to the White House's $50 million Y2K Information Coordination Center (see photo). There, White House Y2K czar John Koskinen, along with about 200 federal workers, will assemble this data into a picture of Y2K's impact worldwide.

In many respects, what the trade groups and companies will be doing over New Year's is a continuation of their ongoing Y2K information-sharing efforts. Many companies have already been exchanging Y2K "best practices," test data and vendor information, said Cathy Hotka, vice president of IT at the National Retail Federation in Washington. ◗



JOHN KOSKINEN, chairman of the President's Council on Year 2000 Conversion, offered a glimpse of the $50 million Y2K center last week

Congress Steps Cautiously to Curb Spam

Looks to market for legislation guidance

BY PATRICK THIBODEAU
WASHINGTON

There's no question that spam is a hot-button topic, and U.S. Rep. Gary Miller (R-Calif.) made the most of that fact recently. He handed out a study by the Spam Recycling Center, a coalition of antispam groups, featuring steamy X-rated photographs and language gathered from spam messages that's certain to offend.

The pornographic nature of spam — 30% of all spam is pornographic, according to one study — is a key part of a renewed push in Congress to curb it. But once the more explosive aspects of this issue are peeled away, other concerns arise — namely, fears that antispam legislation could impact freedom of speech or hurt e-commerce. These issues have made it difficult for antispam legislation to win support.

Miller is attempting to sidestep some of those concerns by making it easier for Internet service providers to sue spammers instead of attempting to regulate spam. As for corporations concerned about spam on their own networks, Miller advises them to deal with providers that aggressively fight it.

But one antispam group, the Coalition Against Unsolicited Commercial Email, would like the bill's provisions expanded to also make it easier for corporations and individuals to bring suits.

The U.S. House Commerce Committee is considering Miller's bill and one by U.S. Rep. Heather Wilson (R-N.M.) that would create a national opt-out system maintained by the U.S. Federal Communications Commission. No action is expected this year on either measure.

The Direct Marketing Association (DMA), however, is raising warnings about the legislation and is urging the commerce committee to go slowly.

"The marketplace is making changes in helping to combat unsolicited e-mail," said Jerry Cerasale, the DMA's senior vice president for government. "We don't want to hurt a medium that holds a potential for consumers." Unsolicited mail could, for instance, be used to distribute coupons, he said. ◗

JUST THE FACTS

Spam Alert

Congress is considering two key antispam bills:

■ **U.S. Rep. Gary Miller's (R-Calif.)** "Can the Spam Act" would give Internet service providers the ability to seek damages of $50 for each unsolicited commercial e-mail sent through their servers, or as much as $25,000 per day in damages. It would also criminalize the forging of Internet domains to disguise commercial e-mail.

■ **U.S. Rep. Heather Wilson (R-N.M.)** has proposed the creation of an opt-out system maintained by the U.S. Federal Communications Commission. The FCC would develop a list of everyone who doesn't want to receive unsolicited e-mail. Spam recipients on this list could sue for $500 for each piece of spam sent to them.

Not All Americans Fleeing Russia for Y2K

BY PATRICK THIBODEAU
WASHINGTON

Unlike the U.S. State Department, U.S. businesses operating in Russia aren't making plans to evacuate employees because of concerns about potential year 2000-related disruptions, according to interviews with officials in both countries.

The State Department recently authorized the "voluntary departure" of embassy workers before New Year's in Russia and three other former Soviet republics: Belarus, Ukraine and Moldova. U.S. officials aren't advising U.S. citizens in those countries to do the same but are urging people to consider deferring travel to the countries until the extent of any Y2K disruptions become clear.

"Those people who are already in Russia could take whatever actions they think are appropriate to ensure their well-being, including departure if necessary," said Nyda Budig, a State Department spokeswoman.

But Michael Forman, the country manager in Moscow for Galileo International Inc., a Rosemont, Ill.-based company that provides electronic reservation services for the travel industry, said he hasn't heard of U.S. workers in Russia packing their bags because of Y2K.

"Many of my colleagues are going to be here. I don't know anyone who is running away," said Forman in an interview from his Moscow office.

"I can't say I'm not worried about [Y2K], but I'm not panicking about it," said Forman. "I'm hoping for the best, but I know there can be potential issues. But I am going to manage those for my company as best I can."

Forman said many of the key infrastructure systems such as power in Russia rely on mechanical controls and aren't date-sensitive. ◗



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Bank One's Woes May Clip Wingspan

Analysts say parent firm's earnings shortfall will hurt online venture

BY THOMAS HOFFMAN

BANK ONE CORP. has cut its 1999 profit forecast for the second time, fueling more predictions that it will clip investments in its WingspanBank.com Internet banking venture.

Even before the latest news, analysts said Wingspan — a 100% Internet bank — might be scaled back because of financial woes at Bank One's First USA Bank NA unit.

Jaime Punishill, an analyst at Forrester Research Inc. in Cambridge, Mass., last month published a report predicting that the 6-month-old Wingspan would "stall" because of the parent company's financial problems and internal politics.

One problem cited by Punishill is that Bank One recently fired First USA CEO Dick Vague, Wingspan's chief advocate. Also, many of the people who built Wingspan came from First USA and will likely be redeployed there, thus "depriving Wingspan of critical operating resources and expertise," Punishill wrote. Without senior-level commitment, the online bank "loses the freedom to cannibalize accounts from Bank One," Punishill added.



BANK ONE CEO John McCoy

Vague's dismissal "isn't exactly the sign of a success story," said M. Arthur Gillis, president of Computer Based Solutions Inc., a Dallas-based bank consultant.

In response to the speculation about Wingspan's future, Bank One CEO John McCoy said, "I don't know of anything we're doing to downsize or change Wingspan." A bank spokesman said the company has no further comment. But last week, Wingspan confirmed that its CEO, James W. Stewart III, had decided to resign.

Analysts, who were stunned by the bank's latest earnings downgrade, are skeptical about Wingspan's future. Bank One "might cut back" some of its marketing and technological investments in Wingspan, said Joan Goodman, an analyst at Donaldson Lufkin & Jenrette Inc. in Chicago.

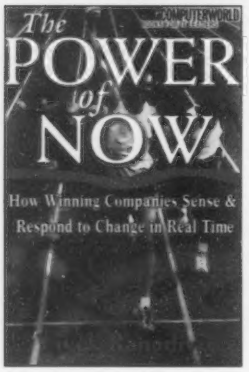
There's a very good chance that Wingspan will be integrated into Bank One "as a click-and-mortar strategy," said Bill Bradway, an analyst at Meridien Research Inc., a Newton, Mass.-based financial services consultancy.

Because Bank One already has a strong branch network, Bradway said he suspects it may decide to use the Internet to distribute information and sell certain products — while leveraging the branch network to generate most of its sales.

That makes sense, Gillis said. "You don't build the future on [the] 2% to 3% of your business" that's generated by Internet transactions, he said. Still, he said, any changes at Wingspan will be "camouflaged," because Bank One has dedicated an estimated $100 million to marketing the Internet bank.

Bank One "can't abandon Wingspan," Gillis said. "They have to save face."

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Keeneland Races to the Web Block

Auctions broadcast via streaming video set records

BY CHRISTINE MCGEEVER

Racehorse auction house Keeneland is using the Internet to broadcast live audio and video of the auctions it holds five times each year. And it's setting sales records in the process, even if it can't quite attribute the results to Webcasts.



KEENELAND'S racehorse auctions are at *www.keeneland.com*

Using streaming audio and video over satellite broadcast services, Lexington, Ky.-based Keeneland Webcast its September auction with help from San Diego-based Intervu Inc. and Newark, Del.-based Autotote Systems Inc. The companies also Webcast this month's auction.

Although some 8,000 viewers accessed the September Webcast, according to Keeneland spokeswoman Julie Balog, sales records set that month can't be attributed to the Webcast alone. Intervu sales executive Jerry Scheibeler said that if Webcast viewers were required to register before viewing the feed, the result could have been quantified.

"Our initial goal is to increase awareness," said Rogers Beasly, sales director at Keeneland. Ultimately, he added, the Webcast should boost sales because anyone with Web access — and disposable income — is a potential buyer.

Nonetheless, the September and November auction results may go into the organization's record books. A one-day record was set on Nov. 8 when sales totaled $99.3 million. The 1999 September yearling sale was the largest in Keeneland's history. It sold nearly 3,500 horses — about 10% of the 1998 U.S. foal crop. It ended the 11-day auction with gross sales of $233 million, a 38% increase from last year.

Jeremy Schwartz, a senior analyst at Forrester Research Inc. in Cambridge, Mass., agreed that quantifying results from such media is difficult. "It makes sense for them to go in this direction, but we're in the adolescent years of streaming media," he said.

For the user, the primary issue is the quality of the image, he said. Unlike those of the adult entertainment industry, which latched on to Webcasting early, Keeneland's live feed must be truly live so potential bidders can telephone a bid to an agent attending the auction. While low-quality images may "just be irritating" in Webcasts from *Playboy*'s site, for example, a poor feed from Keeneland might result in a buyer missing out on a sale, Schwartz said.

Gartner Profits Down as Firm Bolsters Consulting

Some suspect research provider will compete with clients in e-business space

BY JULEKHA DASH

GARTNER GROUP INC. reported fourth-quarter earnings below analysts' expectations and warned of more trouble ahead as the firm invests $50 million to $60 million to expand its electronic-business consulting operations, which include augmenting its consulting workforce by 50%.

An analyst and an executive at an information technology services firm said they were concerned that the Stamford, Conn.-based company would tread on its research clients' territory as it goes after the same electronic-business projects.

Money Motivates

However, Gartner contends that it won't focus on implementation or systems integration. As a result, Gartner said it regards firms such as IBM and Electronic Data Systems Corp. as partners rather than competitors.

Julie Giera, director of research for IT services at Giga Information Group Inc. in Cambridge, Mass., said she thought Gartner's expansion into the electronic-business consulting realm represented its "need to make money, rather than anything strategic."

Gartner's fourth-quarter net income was $2.9 million, about 85% less than last year's fourth-quarter net income. These results included charges associated with a spin-off as well as workforce-related costs, such as a $25 million employee incentive plan. However, year-on-year revenue rose to $186.9 million from $168.7 million.

According to Kennedy Information Research Group in Fitzwilliam, N.H., the worldwide consulting market reached $89 billion last year and is expected to grow to at least $100 billion this year.

Bumping Heads

Giera said that while Gartner has the advantage of being able to leverage its "marquee name," the company will "straddle dangerous territory" as it competes with its research services' clients.

But Gartner dismissed such claims. Regina Paolillo, Gartner's chief financial officer, said that unlike IT services firms such as Andersen Consulting or IBM, whose strengths lie in either systems integration or implementation, Gartner will focus on areas that affect IT management and operations. For example, the company would create tools — such as a project management template — on top of its research services, which would remain its core strength.

However, Dean Whitlock, a vice president of electronic-business services at Dallas-based ICL, a global IT services company and a client of Gartner's advisory services, said he doubted whether his company and Gartner could avoid bumping heads in the electronic-business consulting space.

"We spend a lot of time up front dealing with [a customer's] e-business. We take some of [Gartner's] research and incorporate that into our thinking," he said. "If they're taking that to the next step in the value chain somewhere down the line, I assume that will play into our space." ▶

In Investment Mode

Some of Gartner Group's fourth-quarter activities:

LAUNCHED GartnerE, 33 new products for business and IT executives focused on electronic-business initiatives

ACQUIRED THE WARNER GROUP, a management consulting firm in the public sector

MADE A 70% INVESTMENT in cPulse, an Internet company that performs benchmarks for online customer satisfaction

E-Commerce Strategy Pays Off for BEA

Middleware maker climbs out of slump

BY LEE COPELAND

BEA Systems Inc. has been transitioning from its roots as maker of Tuxedo middleware transaction tools to developer of a full-fledged e-commerce platform during the past year. And that strategy appears to be paying off.

The San Jose-based company, buoyed by the rapid growth of the Internet, reported better-than-expected third-quarter earnings as a result of sales of its Web infrastructure tools, the WebLogic application server and its transaction platform.

BEA's stock soared $9.25 to $81.75 last Wednesday, compared with a 52-week low last November of just $8.69.

EARNINGS REPORT

"BEA has successfully moved the company from a provider of staid middleware solutions into a fully integrated provider of e-commerce solutions," wrote Michael E. Stanek, a financial analyst at Lehman Brothers Inc., in a stock report.

On Oct. 31, BEA reported income of $14.2 million on revenue of $126.5 million, a 56% revenue increase from the same period a year ago. At that time, the company posted earnings of $7.6 million on revenue of $80.9 million.

Analysts attributed BEA's numbers a year ago to year 2000 concerns at large corporate information technology shops that temporarily delayed Web developments.

"A year ago, this particular market, and across the industry, got taken down on Y2K concerns and saw spending shifting from middleware software to bug fixes," said J.C. Simbana, a research analyst at American Fronteer Financial Corp. in Denver.

"We were put in the penalty box a year ago and held in Y2K prison," said BEA Chairman and CEO Bill Coleman. "But meanwhile, e-commerce came along and threw the market into high gear."

Web is the Way

Simbana said companies are increasingly focusing on their Web efforts. "We also are seeing more spending from [enterprise resource planning] going toward e-commerce, supply-chain and customer relationship management software," she said.

Gartner Group Inc. in Cambridge, Mass., has predicted that the market for e-commerce software will hit $1.3 trillion by 2003.

BEA executives said that 54% of the company's revenue came from its e-commerce products in the third quarter. ▶

BRIEFS

Ariba to Buy Auction Software Maker

Ariba Inc. in Mountain View, Calif., last week said it would acquire TradingDynamics Inc. in a $400 million stock deal. TradingDynamics, also based in Mountain View, makes auction software. The acquisition is expected to help Ariba add dynamic pricing capabilities to its three e-commerce product lines.

E.piphany Purchase

E.piphany Inc. in San Mateo, Calif., announced last week that it would buy RightPoint Corp., also in San Mateo, in an estimated $400 million stock deal. E.piphany makes software that helps companies collect and analyze data. RightPoint's software helps companies conduct personalized marketing.

Lawsuit in Stock Deal

An Israeli venture capital firm is seeking more than $100 million in a lawsuit against its New York investment banker for secretly purchasing technology stock it was hired to value and sell.

BRM Technologies Ltd. is suing Broadview International LLC in connection with the valuation and sale of 36,000 shares of Check Point Software Technologies Ltd. in Redwood City, Calif.

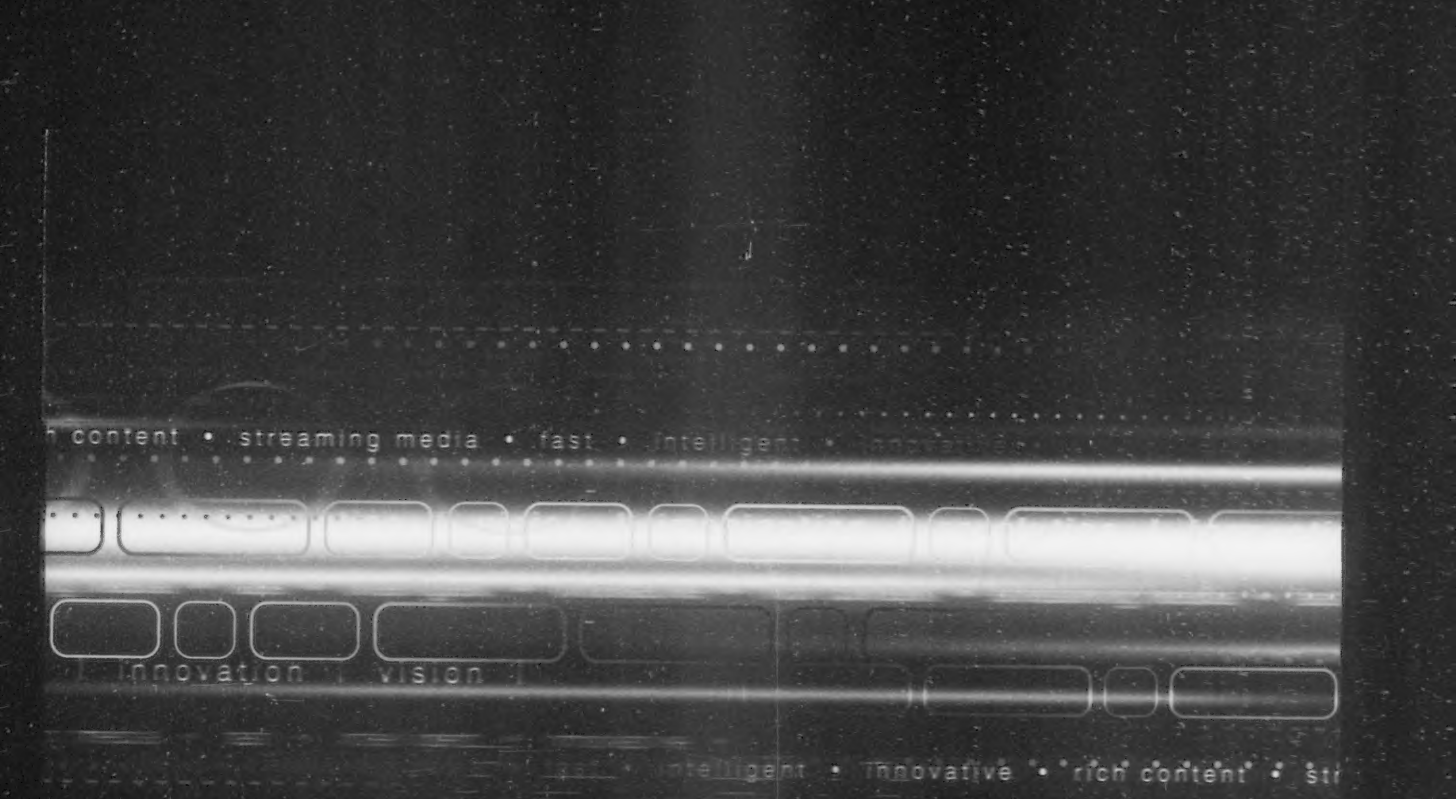
Ask Jeeves Acquisition

Ask Jeeves Inc. in Emeryville, Calif., which offers Web-based question-answering services, last week acquired Net Effect Systems Inc. in North Hollywood, Calif. Net Effect provides Web-based customer assistance software and services. The stock transaction was estimated at $288 million.

Disney Offers Stock

The Walt Disney Co. shareholders last week approved a plan to create a separate stock for the company's Go Network Internet portal (NYSE: GO). The Go Network (*www.go.com*) grew out of the former search engine company Infoseek Corp., which Burbank, Calif.-based Disney recently purchased and combined with its Buena Vista Internet Group.


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MARK HALL

Supercomputer revival

NOT THAT LONG AGO, only spooks inside the National Security Agency and weapons designers at the national laboratories craved access to high-performance computing (HPC) systems. Commercial applications couldn't leverage the horsepower, and businesses couldn't afford supercomputers anyway.



MARK HALL is *Computerworld*'s West Coast bureau chief. You can contact him at **mark_hall@computerworld.com.**

That's no longer the case. Just ask analysts at International Data Corp. and certain government officials who fret that HPC research and development has been turned on its head. Today it's for-profit operations driving the direction supercomputers are taking. You'd know what I mean if you happened to be one of the privileged few at last week's SC99 conference in damp Portland, Ore., instead of stuck among the hordes at Comdex in Las Vegas.

Although there was some remarkable pure research showcasing HPC — such as the Arctic Region Supercomputing Center's tracking of a wolf pack in Alaska — the buzz at the Portland Convention Center was how e-commerce had reinvigorated the very high end of computing technology.

It's no wonder. Supercomputers were designed to analyze complex what-if scenarios on massive data sets, from decrypting complex enemy cyphers to predicting "collateral damage" from our own nuclear stockpile.

Traditional IT problems, complex as they are, don't generate anywhere near the volume of data supercomputers are used to crunching. Internet businesses do. They gather enormous amounts of information about their customers. Amazon.com, for one, is said to store nearly a half-terabyte of data each week. It and others need to extract knowledge about their customers from all that digital stuff they collect. Indeed, one of the hottest topics at SC99 was data mining, a technology with a venerable HPC pedigree.

E-commerce operations are using data mining on supercomputers to predict everything from customer buying habits to online fraud. At last week's Oracle World in Los Angeles, Ray Lane, Oracle's crusty president, claimed that data mining is his company's fastest-growing business segment — and he doesn't see any end in sight.

Once again, we should thank those paranoid spymasters and warmongers who spent billions of dollars to create the Internet, and also the supercomputers that, if used properly, will make commerce easier and better for all.



DICK HUDSON

CEOs won't trust CIOs until CIOs stick around

LATE LAST YEAR, at the Anderson Graduate School for Business Management at UCLA, I overheard two CEOs commenting on CIOs. One said, "I don't trust them because they are not committed to my company or industry." The other CEO's response was, "My current guy is our third in seven years. I call him the CIO du jour." Among their other complaints, they mentioned that each new CIO dismantled the IT philosophy, if not the existing IT direction, that had been established by his predecessor.



DICK HUDSON has been the CIO at Global Marine Inc., a Houston-based offshore drilling company, for 17 years. Contact him at **Dick.Hudson@glm.com.**

Let's fast-forward to July 1999. I'm one of 100 people attending a major annual conference for CIOs. At one of the free-wheeling open-discussion sessions, several CIOs are lamenting — or rather, whining — that their CEOs don't understand or appreciate them. Thinking of my experience at UCLA, I ask how many of those present have been employed as the CIO at their present firm for 10 years or more. Three of us raise our hands. Continuing this poll, I ask for a show of hands from those who have been CIOs for five to 10 years. A few more raise their hands. Finally, I asked CIOs who have held the job for less than five years to raise their hands. At least 90% of those in the room do so.

The problem isn't that CEOs don't understand us. They understand us too well. As a group, we're here today, gone tomorrow. If we, as professional businesspeople, expect to gain trust and establish a credible presence, we *must* grow up! Most of the executives in mainstream enterprises who hold senior management positions in operations, finance, manufacturing, distribution and development have a company and industry history that we CIOs don't match and aren't inclined to.

A major trade publication had an article recently about some CIOs who had changed jobs. They did so because they were frustrated that management was unwilling to embrace constant technological change at as rapid a rate as they'd like. The article's author concluded that CEOs needed to listen and learn if they wished to keep their CIOs content and onboard. That point of view — painting the CIO as some poor, misunderstood figure

— strikes me as quite arrogant.

The CIO role within corporate America is about 20 years old. As such, it is well nigh time to leave our teen years behind us and become true professional executives. As part of our maturation, we need to change our focus from technology to service. We should be committed to our employer's product or service. And we need to become senior executives within the ranks of our employer who just happen to have the information services division as our area of expertise.

Until we do, we will just remain the CIO du jour. ◗

DAVID MOSCHELLA

Dot-com envy grows in hearts of IT professionals

WHILE SIFTING through my weekly reading a few weeks ago, I came across two stories with a connection so striking that it forced me to drop the column I was originally preparing.

First, there was Akamai Technologies (a name that hardly anyone knows is pronounced Ock'-a-My). Akamai was founded in August 1998 by some folks at MIT to provide systems that speed up Web page delivery. During the first nine months of this year, Akamai had revenue of $1.3 million. Nevertheless, its recent initial public offering somehow pegged the value of the company at an astounding $13 billion, or 10,000 times current revenue. Akamai's co-founders, an MIT professor and a doctoral candidate, are, at least on paper, each worth more than a billion dollars. Even some students have gotten rich.



DAVID MOSCHELLA is an author, independent consultant and weekly columnist for *Computerworld*. Contact him at **dmoschella@earthlink.net.**

The other story appeared in the Nov. 1 issue of *Computerworld*. Under the title, "The Pay Ain't Enough," *Computerworld*'s Annual Salary Survey reveals that many IT professionals, almost regardless of specific job titles, are unhappy with their basic compensation and bonus packages. According to the story, most IT professionals have salaries in the $40,000 to $75,000 range, or about 1/20,000th of what that MIT professor, Thomas Leighton, and the graduate student, Daniel Lewin, earned for their past 12 months of work.

Is it any wonder that many IT professionals are feeling increasingly dissatisfied, even though their own salaries are actually rising nicely? For the past few years, we have lived amid an almost daily deluge of dazzling Internet wealth creation, where only billionaires make news and mere multimillionaires are barely worth mentioning. Whether it's the mainstream business publications, the computer trade press or even the local TV news, we are constantly reminded of just how rich other IT workers are getting.

Inevitably, this has created a widespread, yet rarely acknowledged, culture of envy, the underlying regret of many IT professionals that they are foolishly missing the opportunity of a lifetime. Such sentiments are hardly surprising.

Indeed, how else would you expect ambitious professionals to respond to a situation where people with roughly the same background and doing roughly the same work might easily have a hundredfold or more difference in compensation, merely because of the company they work for?

Unfortunately, it's all too easy for this understandable sense of jealousy to steadily morph into guilt, or even self-recrimination. Have you ever asked yourself why you're not part of the dot-com revolution? Do you ever feel stupid, gutless, lazy or just plain unlucky? Or have you ever secretly hoped that not joining a start-up wouldn't look so dumb if only a bunch of today's Web wonders would suddenly go bust? Too often, our anxieties and resentments bring on an unhealthy case of *schadenfreude*, that great German word for the satisfaction we sometimes feel after the distress of others.

Because the total number of IT employees at dot-com firms is still just a tiny fraction of the total number of IT professionals, these huge income gaps will continue. The fact is, we can't all work for an Internet company. Yet as long as we have to watch others get so phenomenally rich, so easily, our own compensation will inevitably seem meager, even though by any objective standard, it's probably more than adequate, even enviable.

The irony is that before the Internet, many Americans used to envy the position and prospects for computer professionals. Many still do. But today, the greenest jealousy and most insatiable envy grows in the hearts of IT professionals themselves. ◗

READERS' LETTERS

A call for netiquette

IT IS QUITE irritating to go to a Web page, hit your browser's Back button and be brought right back to the same page instead of to the previous site ["Net Manners Matter: How Top Sites Rank in Social Behavior," Business, Oct. 18]. Are some Web designers so afraid that their pages aren't good enough to keep people that they have to hijack them? Forcing you to use your history file to get back to where you want to go is not good Web behavior and should be stopped.

Ken Ziegenbein
North Little Rock, Ark.
ken.z.rw@ix.netcom.com

Taking the pain out of the renewal process

I RECENTLY received my renewal notice. I was expecting the hairy, time-consuming, pain-in-the-butt renewal form that I have to go through every time renewal time comes along. I understand it's a necessary evil, but that didn't make it any more pleasant. Your new renewal process was so easy I couldn't believe it. That's the way it is supposed to be. Quick, simple and easy.

Hurrah for you! Your renewal process should become an industry standard. You not only have some of the best industry coverage, you now have the best renewal process in the industry.

Congratulations. It's little things like this that keep your customers coming back to you and make them appreciate you better.

Ken Newman
The Minute Maid Co.
Houston
knewman@minutemaid.com

Time to abandon Cold War assumptions

FOR THOSE WHO were frightened by the Oct. 18 Hack of the Month column ["Crackers Subvert Servers to Map Web Weak Spots," Technology], let's take a close look at the facts and assumptions.

Some guys wrote a virus that scanned proxy ports and reported some information to the remote server rusftpsearch.net. The site happened to have a name with "rus" in it, and the first page was in Russian.

Fortunately for the poor little Russians, the Internet also gives the ability to trace any server with its unique name and IP address. I did it myself. The root led to a Seattle Sprint server. Further checking led to the huge portal virtual-valve.com.

The hackers could monitor data retrieved in the comfort of a New York apartment, San Francisco patio or a Moscow bear hedge.

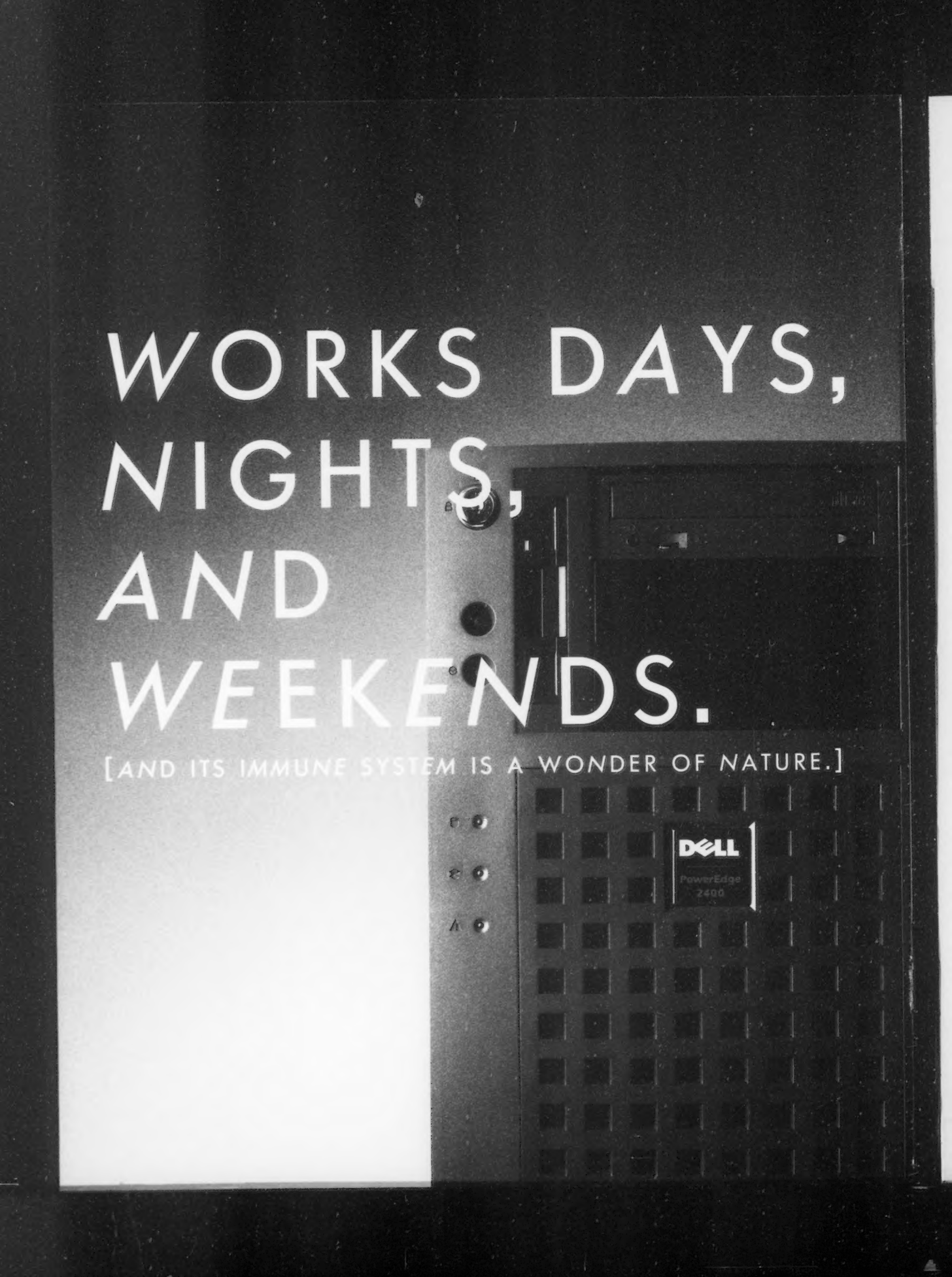
For the leading computer magazine to make this easy choice for the nationality of the hackers reminds me of the Cold War, with old military chiefs from both sides looking for reasons to build more weapons.

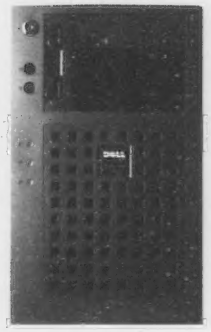
Serge Chychkan
Computerworld Kiev
Kiev, Ukraine
hard@cw.comizdat.com

DEBORAH RADCLIFF RESPONDS: *Mr. Chychkan's information is correct. But the System Administration, Networking and Security Institute has discovered more evidence that points to a Russia-based attacker. The server was administered by someone with the hacker handle Black Hammer who is known in the Russian community, and some of Hammer's code is published at a Russian newsgroup, fido7.pvt.virii.*

Neither I nor Computerworld *has it in for Russia, which is why the article carefully stated the attacker may have been from Russia.*

COMPUTERWORLD welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Allan E. Alter, columns editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax: (508) 875-8931; Internet: letters@computerworld.com. Include an address and phone number for immediate verification.


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DAN GILLMOR

Hong Kong has its own way of embracing the Net

HONG KONG

THE ASIAN EDITION of the Internet World show, held here earlier this month, wasn't what you'd call huge. The exhibits barely filled a single hall on the top floor of the convention center. Yet even though Internet World Asia was dwarfed by a trade show called Hong Kong Optical, it drew considerable local excitement. The Internet has arrived in Asia, in a big way.



DAN GILLMOR is technology columnist at the *San Jose Mercury News*. Contact him at dgillmor@sjmercury.com.

I'm teaching new-media journalism part time at Hong Kong University this month. (Yes, that means I wasn't at Comdex last week — what a relief!) The rest of my visit has been occupied by meetings with technology people. Hong Kong isn't a hotbed of tech developments, but it's definitely no backwater, either.

The most notable aspect of the Hong Kong tech scene is wireless. We in the U.S. are clueless in this area. Our multiplicity of standards and large land mass have led to a balkanized, backward mess compared with the more developed parts of Asia, notably Hong Kong and Japan, where the population density is much higher, standards are in place and competition is firmly established.

The U.S. is just getting started with Internet-connected phones and specialized mobile data services. In Hong Kong, it's routine to bank, trade stocks and learn about sales in nearby shops via your mobile phone. Companies in this highly competitive market are in the process of rolling out a host of even more amazing services.

Mobile data isn't the only area where I've seen some fascinating developments here. Sometime next year, a company named Pacific Century Convergence will launch one of the first genuinely interesting attempts to marry Internet content with television. Founded by the same man who started the Star TV satellite system in Asia, Pacific Century Convergence will launch a satellite-delivered, high-speed data service for an Asian audience. As I understand it, it will create content by acting like a giant Web operation that adds television to the site, instead of the other way around — the opposite approach from WebTV in the U.S. This is one experiment to watch closely.

So is a larger experiment in governmental activism: Across the region, in the wake of the Asian financial crisis, regimes have concluded that technology equals long-term financial salvation. This is sensible to a degree, but some of the activity strikes me as, at best, optimistic.

The Hong Kong government, for example, is backing several technologically driven venture funds. It's also behind a project called CyberPort, a grandiose attempt to duplicate some of the conditions that have made Silicon Valley so powerful. Clearly, Hong Kong has some attributes that will be helpful in the tech arena, namely an entrepreneurial culture and extremely hard-working people.

I keep running into entrepreneurs who think they'll be able to duplicate the success of American Internet companies. That also strikes me as optimistic. But venture capitalists are beginning to pour money into the Internet sector here, and they aren't in business to lose money.

One thing I can't get away from, even here, was on the front pages of the local papers last week: The judge's findings of fact in the Microsoft case. I wasn't surprised — I'm typing this on a PC at the university, and it's running Windows. ◗

JOHN GANTZ

Uncle Sam vs. Microsoft: Does it really matter?

BACK IN AUGUST, I wrote that the government's suit against Microsoft wouldn't have much impact on Microsoft's market. Heck, as it turned out, it didn't even have much impact on the company's stock. What the suit did do is fell a lot of trees to make newsprint. The suit makes for great entertainment.



JOHN GANTZ is a senior vice president at International Data Corp. in Framingham, Mass. Contact him at jgantz@idcresearch.com.

When IBM and AT&T went through it, there were no personalities involved. The government wasn't suing the richest man on earth. Those were just politics-as-usual trials that put everyone to sleep, even the judge (which occurred many an afternoon in IBM's case). But this is Uncle Sam vs. Bill and Melinda. It's personal. You can take sides.

But the lawsuit won't change much. Whether Microsoft chooses to drag the case out in appeals and suffer through an onslaught of civil lawsuits or go to the other extreme and voluntarily spin itself into pieces, the information technology industry will go on pretty much as usual.

Despite the fact that one federal judge has declared Microsoft a monopoly, it's a monopoly of a different character than the two in the industry that have preceded it. IBM's monopoly arose out of the patents for the Hollerith punch card machine and was 50 years in the making before the government filed suit in 1969. The company's strength was its vertical integration — IBM made the chips, wrote its dispatching software and sold the punch cards — in an era when vertical integration meant market power. AT&T's monopoly was even older, springing from the early Bell patents and evolving with government sanction though the 1900s. Its strength was in its assets — the wires, switches, telephone poles, repair trucks and billing software.

Microsoft's monopoly is more ephemeral. It's built on pluck and luck and, as a monopoly, winked into existence practically yesterday. And that monopoly could wink out of existence tomorrow, leaving Microsoft a pitiful giant, optimized for self-defense against the U.S. government but not for delivering into and capturing emerging markets.

What's at the core of Microsoft's monopoly? Great research and development labs? Nobel Prize-winning scientists? Billions in embedded plants and equipment? An awesome patent library?

Try this theory: Microsoft is where it is because, for a period at least, it was what economists call a "natural monopoly." Such monopolies have benefits that can be delivered *only* under monopolistic conditions. The phone company was like this when the nation wanted universal service but didn't want multiple carriers with incompatible equipment and service stringing wires to the same households.

Well, isn't that the situation Microsoft walked in on when 16-bit computers came into vogue? WordStar documents that couldn't be read in WordPerfect? Lotus 1-2-3 files that didn't read into Excel? E-mail that could go only to users of the same system? The market wanted interconnection, whether or not it was elegantly executed. If buying products from a single vendor in Redmond was the simplest way to get it, so be it. It seems to me that the market liked sticking with a single product set. It made everything simpler.

But now the Web offers that interconnection. Web front ends make it possible to configure applications out of best-of-breed products from multiple vendors relatively simply. In the markets that count, the skills required for Microsoft to become the monopoly it has just been declared are almost exactly what no one needs: monolithic products built on biennial cycles, endless rounds of beta tests, a single-vendor brand name, a tight hold on application programming interfaces.

So I'm looking for a sequel to this particular drama — a follow-on that will premier when Microsoft realizes it could do a better job than the government at breaking up the parts of a monopoly that's showing its age like it is. I hope it stars Bill and Melinda. ◗

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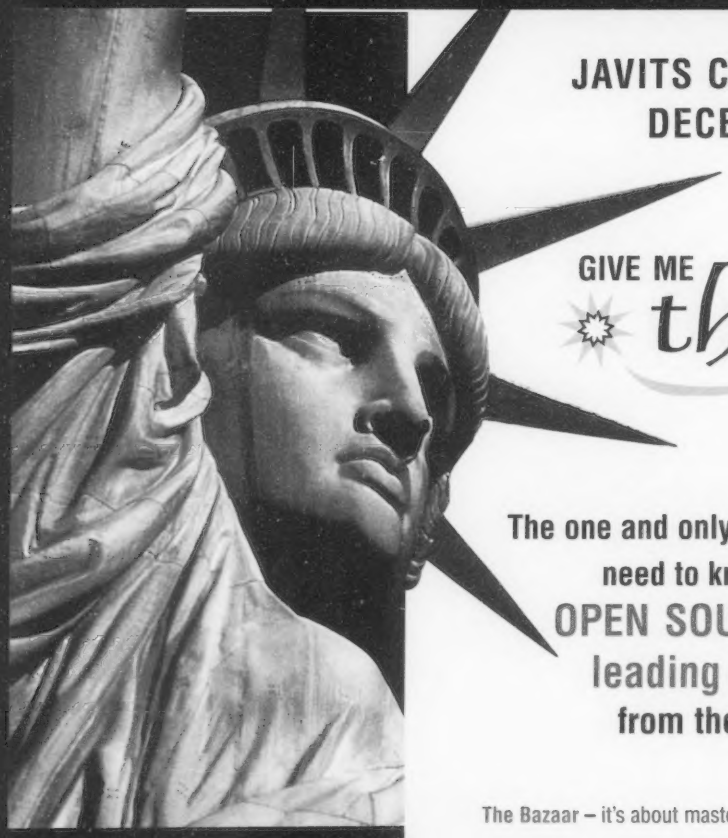
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BUSINESS

Y2K: THE MOVIE

Computerworld gives a big thumbs down to NBC's attempt to portray potential Y2K disasters in a flashy action pic. It's far from believable and could even generate panic among an audience that can't tell where fiction leaves fact behind. ▸ 38

E-COMMERCE PARTNERS

3M found a way to market products online without alienating resellers. The company is creating virtual, cobranded showrooms with resellers. Retailers get to keep the profits; 3M gets important customer data. ▸ 39

BE PREPARED

To properly secure your Web site, you have to properly train your staff, Alan Paller warns. Many IT departments don't provide their employees with the resources and training needed to prevent hacks. Paller's three-step approach may help prepare your staff for attacks. ▸ 40

BIG TURNAROUND

A critical IT project hit the skids at Pinnacol Assurance — everything that could go wrong did. But the IT team was able to salvage the project, repair its nearly ruined reputation and save millions of dollars per year. Here's how. ▸ 42

MS. MIS

You don't have to be a math wizard to make it in the high-tech world. But the heavy math and science focus of many IT programs has put off some women who don't want to miss out on humanities studies. To up the number of women in IT, Smith College is offering an engineering program that doesn't skip the humanities. ▸ 46

RETAINING STAFF

Hanging on to top techies isn't easy these days. The top 10 retention tactics include an environment where creativity can bloom, hours are flexible, bonuses and annual reviews are equitable and learning is constant. ▸ 48

BENCHMARKING

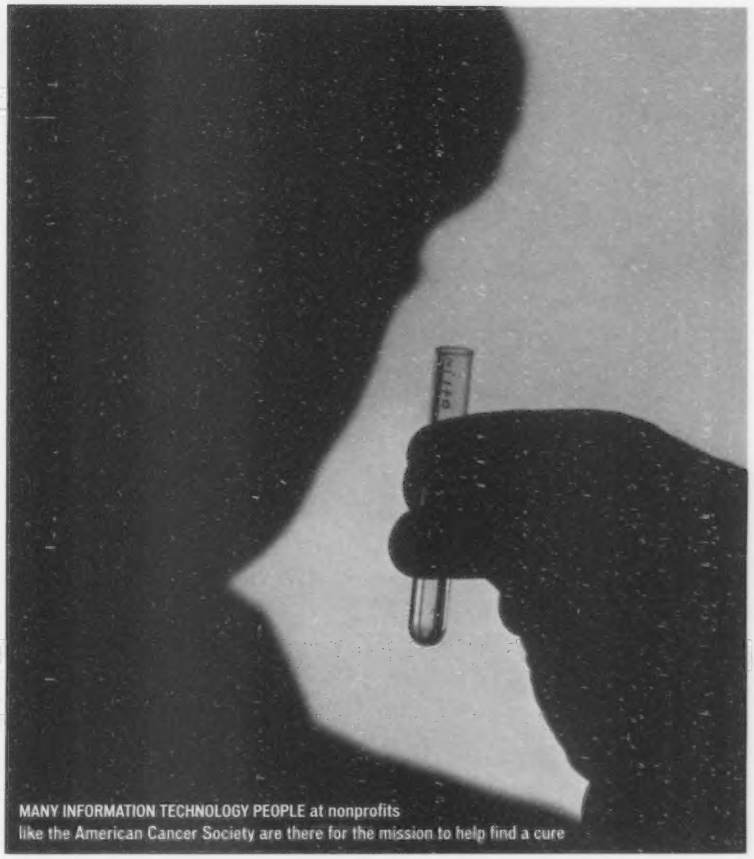
Is your IT organization as efficient as it could be? Benchmarking, a measurement tool used to gauge a company's operating performance against those of competitors, can help weed out the waste. See QuickStudy. ▸ 52

E-COMMERCE PRESSURES

The pressure to enter the e-commerce market is creating a speed-at-all-cost attitude among IT execs. Many feel it's better to get into the marketplace quickly than to take time to make sure they're getting a good deal with a vendor. The results are technical solutions that are late, incomplete or flat out don't work, Joe Auer says. ▸ 54

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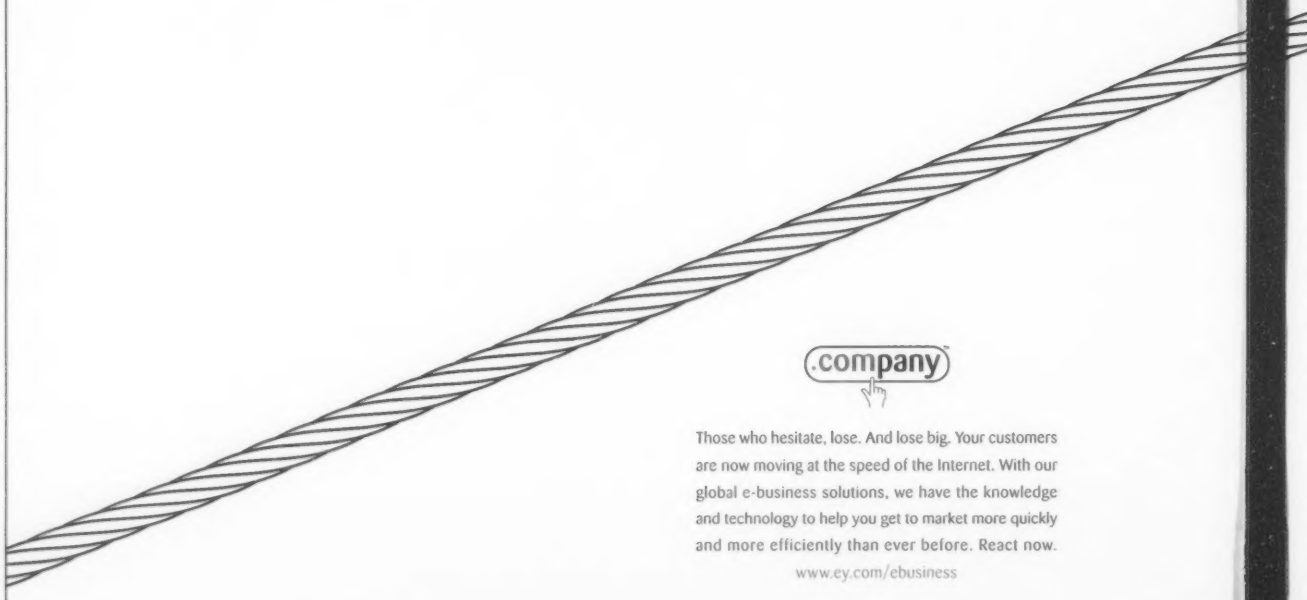
MANY INFORMATION TECHNOLOGY PEOPLE at nonprofits like the American Cancer Society are there for the mission to help find a cure

LOWER PAY, HIGHER CALLING

JOBS AT NONPROFITS don't pay as well as jobs at for-profit companies, but IT professionals say the personal satisfaction they get from their work is priceless. And they say the assumption that nonprofits use only second-rate technology is bunk. At the best organizations, they get to work with the best technology for the best reasons — marrying personal passions with professional ones.

50

The quickest response time wins.



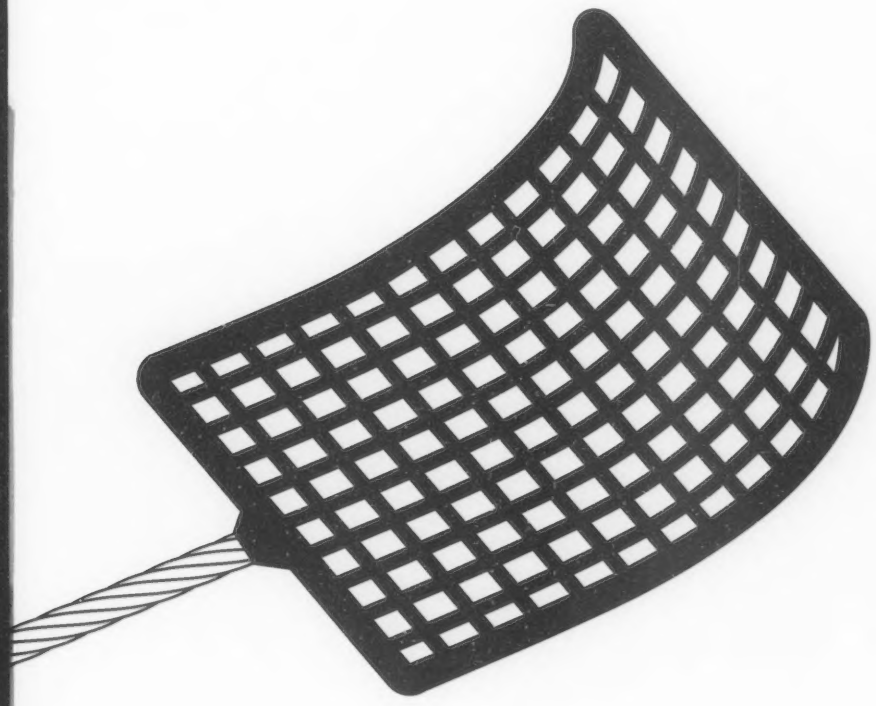
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FROM THOUGHT TO FINISH.™

A Millennium Disaster: NBC's *Y2K: The Movie*

Though exaggerated and unrealistic, it may open up public dialogue on Y2K

BY MATHEW SCHWARTZ

REVIEW

ALARMS BLARE. The Washington National Guard swarms the streets of Seattle, evacuating everyone from their homes.

Could it be the government's new strategy against Microsoft Corp.? Guess again. It's a scene from NBC's two-hour *Y2K: The Movie*, which was scheduled to air last night.

In the film, the White House calls on uber-scientist Nick Cromwell (played by *Thirtysomething*'s Ken Olin) to save the world. Sorry, make that the U.S. (The rest of the world — notably Sweden — isn't so lucky.) Nick's the guy. He's got MIT credentials and the world's foremost knowledge of both advanced computing and nuclear power. But most of all, he's a family man. (Hold that thought.)

There are some, um, inaccuracies in the film. But there's also lots of action caused by nasty year 2000 bugs. Among other things, the Eastern Seaboard loses power, and a Swedish nuclear reactor melts down at 2 a.m., killing the entire staff (and presumably not doing the rest of Sweden much good). That last point is important because the exact same kind of reactor is in use in Seattle.

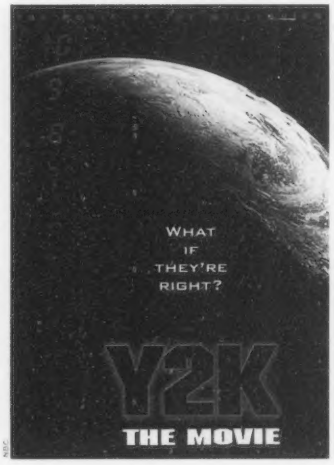
Nick's family lives in Seattle, so he must supersonic-jet his way back to the West Coast and pull a few MacGyverlike pyrotechnics out of his hat to save the day. Oh, did I mention he gets help from his dad, who was the NASA genius who helped bring a crippled *Apollo 13* back to Earth?

Unfortunately, while the film does cough up some relatively simple explanations of the Y2K date problem, it entirely misses the big picture.

"The shame is that it plays to the end points — it's the end of the world and there's a silver bullet, which really trivializes the whole problem," said Y2K expert Leon Kappelman, an associate professor of business components information systems at the University of Texas, Denton.

As Ian Hayes, Y2K expert and principal at Clarity Consulting Inc. in South Hamilton, Mass., noted about the film: "I love the idea that there's one guy who can save the world. Oh, good — he's going to go and replace every single embedded chip out there."

At least two other Y2K films were scheduled for theatrical or broadcast release before year's end, but they were canceled. One, for Fox Television Network, also involved nuclear disaster, according to Kappelman, who consulted for the film. The other was to star actor Chris O'Donnell (Robin in *Batman Forever*) as a computer programmer who discovers a Y2K bug that exposes New York to a terrorist attack. But Warner Brothers pulled the plug on it in July. *The Boston Globe* quoted the film's producer, Bing Howenstein, as saying he believed the studio had anticipated that audiences would have trouble distinguishing fiction from reality.



One other movie, *Y2K*, did get made. It stars Louis Gosset Jr. (*Iron Eagle*) as a soldier who must find and defuse a nuclear missile that is hidden in the jungle and set to go off on New Year's Day. It was released straight to video — in Japan.

Maybe *Y2K: The Movie* should have joined it there. The biggest problem isn't its overblown picture of Y2K disasters. It might make some people nervous, but few will crowd the streets in fear based on a TV movie. NBC's biggest disservice was reinforcing the myth that Y2K is going to go away anytime soon.

But as *Computerworld* reported last week (News, page 4), the movie did prompt some local officials to coordinate with their local TV news teams to follow the movie with calmer discussions of the problem and its likely effects. So if there's one potential saving grace for the film, it's that it might promote public dialogue on Y2K.

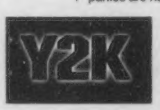
For example, fearing potential public concerns because of the power outages depicted in the movie, Edison Electric Institute in Washington has urged NBC affiliate stations to help reduce public fears by reporting about local Y2K preparations. The trade association, which represents U.S. shareholder-owned electric utilities that generate and deliver three-fourths of the nation's electricity, sent letters to the nation's 100 largest NBC affiliates prior to the airing of the movie. ◗

Analysts: NBC Missed The Big Picture

Y2K experts Ian Hayes and Leon Kappelman foresee some real-life situations that could have added more realism to *Y2K: The Movie*.

Hayes' view of what might happen:

- **Theft and looting.** "If I had to add to this plot, I would probably have a few bank robbers or house robbers running around" because of all the money people will initially hoard in their homes.
- **Phones won't ring.** "I'll bet Y2K crisis centers are nice and quiet at midnight."
- **Travelers will be stuck at the airport.** "The real airplane-related horror could be in trying to transfer between flights. If automated baggage tracking fails, flight boarding will be delayed."
- **Economic problems will occur.** "The real terror is the potential economic downturn that could result from even a fraction of the Fortune 500 experiencing systems failure and revenue shortcomings."



Kappelman's view of what might happen:

- **Workers will pull futile all-nighters.** "Many companies are having people work all night, through the date change. Trouble is, overcaffeinated people who don't usually work night shifts don't make the best real-time troubleshooters."
- **News of problems will be delayed.** "In most cases, we're not going to know exactly what happened until these things get litigated" because no one will have an incentive to report security breaches and software problems.

– *Mathew Schwartz*

Fact or Fiction?

We asked Y2K experts Ian Hayes at Clarity Consulting and Leon Kappelman at the University of Texas, Denton, to reality-check some of the events in the movie:

White House has a Y2K situation room.
It already exists. Scheduled to operate at end of December and early January. Roughly $40 million invested so far; no real-time updates, however.

Eastern Seaboard loses power when one Philadelphia power plant fails.
No. They're not sure one plant would do it.

Some emergency medical services systems fail.
Possibly. To date, 50% of 911 systems haven't reported Y2K compliancy. Manual backups exist but are slower.

Fetal monitor in hospital produces erroneous readings.
Possible. "Dates show up in really weird ways. . . . There was one radiation machine they had to take off the market because it was calculating incorrect doses," said Hayes.

Woman dies during surgery when backup generators fail.
Possible. A similar event, not Y2K-related, occurred when Hurricane Floyd swept through Rhode Island.

Navy F-18 fighter jet falls from the sky.
No. Very few systems on airplanes are date-dependent.

U.S. banks dispense only $20 per customer on Dec. 31, 1999.
Possible. The U.S. has printed an additional $70 billion in cash for Y2K — all on top of the usual $200 billion-plus reserve. Still, if people get scared, there could be a run on banks.

— Mathew Schwartz



3M Online Effort Preserves Sales Channel

Cobranded showrooms let manufacturer control marketing, gather data on buyers

BY JULIA KING

3M Co. has hit upon what could turn out to be the Holy Grail of e-commerce for manufacturers: a way to market products directly to online consumers without stomping on longtime channel partners.

Rather than competing with resellers, the Minneapolis-based maker of Post-it Notes and thousands of other products is working with them to create virtual, cobranded showrooms. There, 3M can control how its products are portrayed and gather valuable data about users of its products.

> We're working through what's going to be the happy medium between manufacturers and retailers.
>
> PAUL MULLANEY, MANAGER OF DIGITAL INITIATIVES, 3M CO.



Resellers, meanwhile, handle all consumer transactions and product fulfillment, both of which are traditional stumbling blocks for manufacturers unaccustomed to shipping "onesie" and "twosie" orders.

"We're working through what's going to be the happy medium between manufacturers and retailers on the Internet," said Paul Mullaney, manager of digital initiatives at 3M's office supplies division.

"We won't sell anything directly, but we'll directly influence users' experience, plus get aggregate information about the customers buying 3M products," he added. 3M's Internet strategy is not so much to sell directly, as it is to help its resellers sell more 3M products, said Mullaney. Now, the company sells only one product, Post-it Notes Software, directly to consumers.

In the long run, that's likely to prove far more profitable than selling directly online, which at best would yield an incremental revenue boost of about 5%, according to Nathaniel Palmer, an analyst at The Delphi Group in Boston.

Resellers, by contrast, represent about 80% of 3M's revenue. "If [3M] can boost that [reseller] revenue by 5%, it's far more effective than adding 5% by selling direct," Palmer noted.

3M is due to unveil its first cobranded showroom next month. Built with online office products retailer Value America Inc. in Charlottesville, Va., the site is dedicated to 3M's line of ergonomic products, such as wrist rests and adjustable keyboard trays.

Online, where shelf space is virtually unlimited, the manufacturer can showcase more offerings and elaborate on all of a product's specific features and functions.

Value America, which plans to build cobranded showrooms with other manufacturers, also benefits, said Andy Rod, president of the company's office products division.

"We want to be known as the place for new products and the best product demonstrations. This way, if 3M comes out with a new product, we can have that product live with a complete presentation in literally a matter of hours," Rod said.

The site is being built with new Java-based software from Austin, Texas, start-up Exterprise Inc., which also will host and manage the showroom.

In addition, Exterprise will function as the trusted third-party keeper of customer and marketing data that 3M and Value America want to remain proprietary.

For example, 3M and Value America may each have 100,000 customers they want to target with a particular e-mail promotion but might not want to share the names. They can turn the names over to Exterprise, which will execute the marketing campaigns and generate customized reports for each company.

USER NEWS

Exterprise's software, called Active Business, also can accommodate multiple trading partners collaborating on a single customer account.

What Exterprise is offering, essentially as an outsourced service, is a flexible technology and networking framework under which different and changing partners can collaborate, said Exterpise CEO and President Manoj Saxena.

Exterprise's offering is indeed new and unique, several analysts said. But other vendors will bring out similar offerings, especially as more manufacturers think twice about selling directly online.

Levi Strauss & Co., which is pulling the plug on its online store after the holidays, "is a perfect example of a manufacturer realizing it just didn't have the channel power it thought it would on the Web," said Gene Alvarez, an analyst at Meta Group Inc. in Stamford, Conn.

Had the apparel maker opted to cobrand online with its traditional retailers, rather than prevent them from selling Levi's clothing at their own sites, it may have fared better on the Internet, Alvarez said.

"Manufacturers are now thinking twice about selling direct online," agreed Mike Bernstein, an analyst at Gartner Group Inc., also in Stamford.

Nine out of 10 manufacturers plan to preserve the traditional supply chain by not selling directly online unless they're selling rare or customized products, according to Gartner research, Bernstein said.

"But what Exterprise is offering allows manufacturers and retailers to retain their place in the value chain," he said. "For all of the predictions that disintermediation was the only way to sell online, this is a real departure."

Y2K Experts: Be Candid but Careful Discussing Status

Not every glitch in January will be Y2K-related

THOMAS HOFFMAN
NEW YORK

When the century date change occurs, organizations should be candid in articulating their status with the press, experts said at the Securities Industry Association's Year 2000 Transition Conference here earlier this month.

But they should also make sure they have gotten to the root of any glitches that may occur on Jan. 1 and not automatically assume that those problems are Y2K-related.

"We [shouldn't try] to keep up with CNN," said John Koskinen, chairman of the President's Council on the Year 2000 Conversion. "The first information [reported about a disaster] is usually wrong."

His group, which will compile Y2K "health checks" on New Year's Day for financial services, retail and other industries, will "need to have two to three hours to evaluate problems and discuss them with industry experts" before posting information about the nature of those glitches on its Web site, said Koskinen, who was the keynote speaker at the conference.

If there are problems to report, Koskinen said, "we have an obligation to tell people about them and how they're being dealt with."

> A well-thought-out plan to communicate with the public and the media is essential.
>
> ARTHUR L. THOMAS, SENIOR VICE PRESIDENT OF GLOBAL OPERATIONS, MERRILL LYNCH & CO.



Others recommended public relations plans that include allowing only approved spokesmen to field Y2K-related questions from the press on that weekend. "A well-thought-out plan to communicate with the public and the media is essential," said Arthur L. Thomas, senior vice president of global operations at Merrill Lynch & Co. in Jersey City, N.J., and chairman of the Securities Industry Association's year 2000 steering committee. That approach should help to stamp out any wild rumors that may surface.

But even if a major brokerage does have Y2K-related transaction problems on Jan. 3, the first day of trading in 2000, the Securities and Exchange Commission (SEC) won't give out information specific to that company, said Sheila Slevin, assistant director at the SEC's division of market regulation.

Still, if publicly held companies do experience any problems during the first week of trading, major news organizations must plan to cover them, said Stephen Jukes, editor at news service Reuters America Inc. in Washington.

Even rumors could be newsworthy, Jukes said. "If they are moving the market, then we have [a responsibility] to report on that."

WORKSTYLES

What It's Like to Work at . . . Sharper Image

Interviewee: Greg Alexander, senior vice president of MIS
Company: Specialty retailer The Sharper Image Corp. (*www.sharperimage.com*)
Main location: San Francisco
Where? On the Embarcadero, overlooking San Francisco Bay
Tenure with company: 10 years at the end of this month
Number of information technology employees: 36, including Web-site team
Number of employees (end users): 1,500, including retail store and distribution center personnel; the numbers rise for the holiday season.



How employees get to work: Nearly 75% use public transportation.
Dress code: Tuesdays through Thursdays, it's "dressy casual," or slacks and collared shirts; Mondays and Fridays, it's "as casual as you want to be," but no jeans with holes, "and we try to stay away from shirts with large logos."
Workday: Completely flexible. One senior programmer/analyst comes in at 6 or 6:30 a.m. and leaves at 3:30 or 4 p.m.; others work from 9 or 9:30 a.m. to 6 or 6:30 p.m.
Come on. Really? "As we gear up for the holidays, management ends up spending more time in the office. . . . And coinciding with our monthly catalog drop, our Web group is probably spending longer hours to get new products featured in the catalog posted to the Web site. But I never want my staff to work long hours and not be compensated with a day off here and there."
Describe your IT environment: "We're primarily an AS/400 shop, but we have 12 or 13 [dedicated] servers for various functions, from voice mail to e-mail to polling servers for our stores."
What about Web servers? "We use an external host, and we're moving those to a new provider. We've been very cautious about doing it right before the holidays."
Atmosphere: "Our products have ended up around the office much more, so it's a more playful environment now."
How so? "We have a lot of one-of-a kind products around. A replica of Robby the Robot [from the 1956 movie *Forbidden Planet*] greets people in the lobby. And there are two Sharper Image executive massage chairs in the lobby, so when vendors come in, they can lounge in those – and we have them where we want them for our meeting. We also have life-size Stormtroopers [from *Star Wars*]."
Must people carry beepers or cell phones? "A couple of managers, myself included, carry cell phones. Programmers who are on-call get a cell phone and a beeper. That's one week every two months. And the [point-of-sale] support group as well as the help desk also rotate cell phones."
Percentage of staff that telecommutes on a given day: "We've just started to experiment with that. We have a senior AS/400 programmer/analyst who's been with us three years, and he moved to Merced [Calif.], which is a two-hour commute. So we've told him he can telecommute one to two days a week. We would do it for anyone whose job description offers the opportunity."
Where the office gossips: "Typically right outside my door – not necessarily including me, but I hear it."
Favorite topic: "Speculation on how well a new product is going to do."
Favorite new product: The Q Ball (akin to an electronic Magic-8 Ball).
Perks: Discount tickets to local theme park Great America; discount health club memberships; an employee purchase program for company products, as well as a direct at-cost purchase program with select vendors.
Would employees feel comfortable e-mailing Chairman and CEO Richard Thalheimer? "I wouldn't say they do it as matter of course, but yes. He really likes people to e-mail him with product ideas."
Quote: "I don't want to say our staff is thin, but we do a good job of supporting a lot of people without a lot of staff. We run a tight ship. So there's never a dull moment. We don't have a wild and crazy environment, but it is fun." – *Leslie Goff*

ALAN PALLER

Security's vicious circle

ON JAN. 21, *The New York Times* described the malicious destruction of the U.S. Information Agency (USIA) Web site. Quoting a USIA official, it said, "We can't have this happening every six months; people depend on us." Had it happened before? Had agency officials been embarrassed? Had they directed staff to tighten security? If the answers are all yes, then why weren't the problems fixed the first time?

Staff at the SANS (Systems Administration, Networking and Security) Institute in Bethesda, Md., interviewed system and security managers at two dozen other government and commercial sites that were compromised and found a surprisingly consistent pattern of decisions, actions and results that may explain the USIA outcome.

After an attack, organizations first spend days or weeks removing the mess caused by the attackers. Consultants or staff experts search futilely for holes that allowed attackers access to the system. It's futile because attackers may enter through one machine and jump to others to do damage — and most hide their tracks.

Then, penetration-testing consultants are hired to perform a vulnerability analysis. Amazingly, they find five to 30 vulnerabilities in every system and prepare voluminous reports listing those vulnerabilities in priority order, but they provide no short list of what has to be done immediately. In large organizations, reports list thousands of security problems.

To correct these problems, finger-pointing isn't enough.

Senior executives are aghast and angry. What have the IT people been doing? The security officer says policies had been written requiring holes to be fixed. Why weren't they implemented? The senior executives demand that corrections be made.



But what happens then? That long list of vulnerabilities hits the system, and network administrators have neither the time nor the knowledge to fix even a quarter of them. They are dismayed; some become nonfunctional. The best of them start fixing problems, but even they recognize that they won't make a dent in the list. Even if they work 70-hour weeks for a month or more, they know they'll still be seen as failures because another vulnerability check will find many holes unfixed.

After a few weeks of trying to fix the things on the list, the systems administrators get a visit from their managers, who say, "We have a crash project; drop everything. This has to be done right now." They ask their manager whether that means security fixes should be delayed. The manager says, "Just for a few days. Finish this project and then get back to fixing security." Days pass; that high-priority project continues; other new high-priority tasks arise. After a few months, the administrators get a late-night phone call saying, "We've been attacked again."

To correct these problems, fingerpointing isn't enough. We have to take fundamental, far-reaching actions on multiple fronts.

To start the process of protecting systems, these three fundamental actions are required:

1. All systems and network administrators must demonstrate the skills to eliminate basic vulnerabilities that account for most attacks.

Nearly all systems administrators want to know how to secure their systems but have never been trained or tested in this skill. So managers must give detailed training to systems administrators in such topics as vulnerability testing, common attacks and solutions, firewall tuning and more — then require hands-on proof that they have mastered the techniques.

2. Auditors must possess the skills and tools needed to measure whether the security tasks have been done.

Many auditors have never learned how to do technical security checks. Their training should include hands-on use of tools for them to ensure that the necessary actions have been taken — tools such as host- and network-based vulnerability checkers.

3. Once the skills are in place, give both groups a high-priority task to close the basic holes across all systems, and give them the time to get the job done. And implement monitoring to prevent new problems.

These tasks won't stop all attacks. But they will make your site a lot less inviting to the criminals who are looking for easy pickings.

Paller is the research director of the SANS Institute in Bethesda, Md. Contact him at alanpaller@aol.com.



GEE. IF IBM MERGED WITH SUN, THEY'D STILL BE #2.

Hmm. More businesses run Web servers from Compaq than from the two biggest talkers in the industry combined. That's approximately one-third of the entire Internet. And it's so many, according to the newest data from InfoBeads.com, the real battle is no longer for supremacy, but who can emerge in the #2 spot. Maybe there's a connection. Maybe the real conclusion to be drawn is that whatever e-challenge you take on, chances are there's a Compaq server handling it gracefully already. Do they give out ribbons for that sort of thing? For more, visit www.compaq.com/NonStop.

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Turning Around The Project From Hell

How the IT team at a Colorado medical insurer snatched victory from the jaws of project management defeat

BY KATHLEEN MELYMUKA

ROB NORRIS HAD REACHED rock bottom. "I sat in a meeting thinking: 'We can't do this project. We tried, and it went to hell. What went wrong?' "

In a word: everything. Twelve months into a six-month project to develop a crucial new medical payments system, the team at Pinnacol Assurance had just concluded that it would have to start over. The project was a morass. Nothing had been delivered. The businesspeople were angry. The information technology team was drowning in depression. Company executives were seething, and Norris' job was on the line.

It had all started a year before when Norris, the new CIO at the Denver-based medical insurance provider, discovered that the recently acquired PC-based claims payments system was a disaster. It was building up huge backlogs while overpaying claimants to the tune of more than $5,000 per day. The company needed a new system that could translate thousands of rules, regulations, fee schedules and billing guidelines into 2,000 accurate payments to insureds per day while enabling Pinnacol to strike creative deals with individual providers and networks. Norris, who had built complex systems before, decided his development staff of two dozen would build it. The MedPay project began early last year, with a six-month time line.

Right off the bat, the project team made some critical errors. "We succumbed to the lure of new technology," Norris admits. "We felt that Oracle Forms and PL/SQL, which were the meat and potatoes of how we did things here, were just not going to cut it."

Anecdotal evidence had led them to believe that Forms couldn't handle the fine control required over the user interface. Java, on the other hand, was enticing. Norris and project leader Duane Hitz had used it in a couple of simple e-commerce applications and liked it. "It seemed like the natural choice," Norris says. Java had no good database connectivity at the time, and it couldn't scale, but that would take a while to discover.

Norris and Hitz also chose a rapid, joint application development (RAD/JAD) approach that sidestepped formal project-management disciplines. The plan was to work closely with users. "[We'd] just talk about something, and the next day we'd show them some screens and go back and forth and get it done very quickly," Norris says.

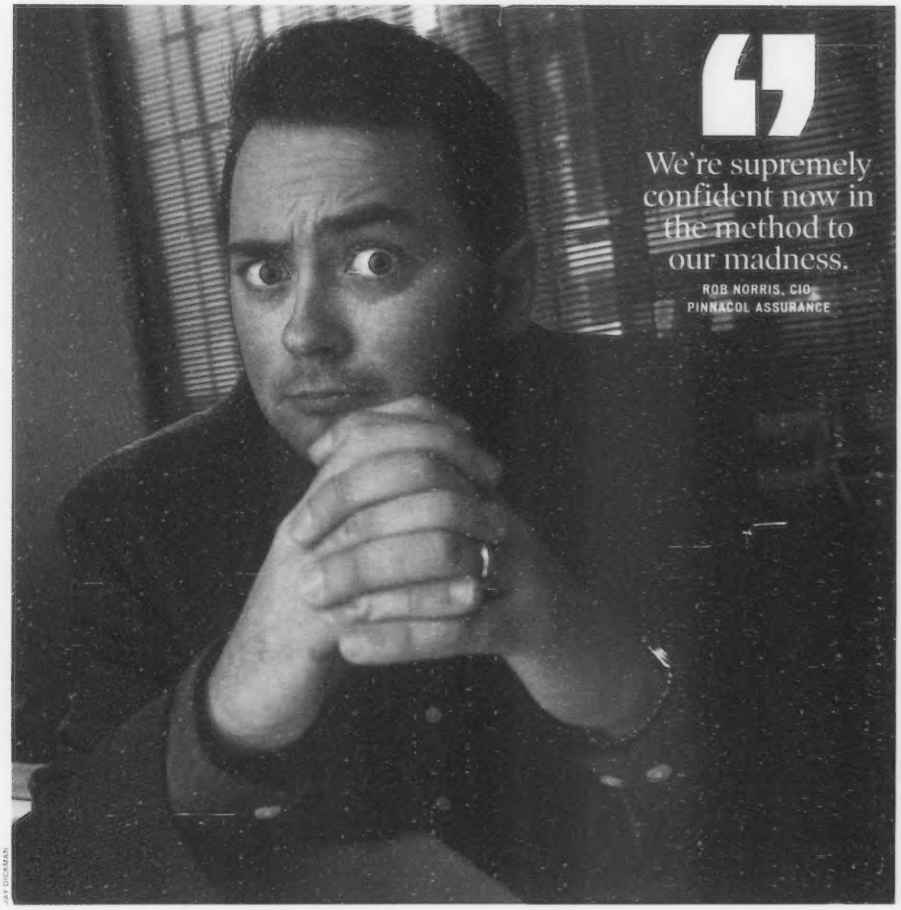
It soon became obvious that problems with Java were sabotaging the RAD approach. Instead of coming back a day later to show users a screen, developers would struggle with Java for two or three weeks. By the time they returned, no one was sure what had been agreed upon. "It became frustrating, and you tended to push the onus on the other side," says Bonnie Cahoon, medical payments manager. "We'd go home shaking our heads."

After months of failure, even RAD champion Norris admitted the approach wasn't working, and he demanded more formal requirements and sign-offs. But it was too little, too late.

Taking a Toll

Meanwhile, all hell was breaking loose on the business side, where the existing payment system continued to spew out errors. Steeped in that turmoil, the business team members had little patience for a project that was clearly running amok. And the RAD failure had turned the team into warring factions. "We were homicidal," Cahoon recalls. "It was hard to be motivated to come to another meeting. It just didn't look doable."

In the IT trenches, depression had settled in like mustard gas. Hitz felt he was "in the abyss." He had lost most of



JAY DICKMAN

his programmers and was the only one left who knew anything about Java. So aside from leading the project, he was doing all the Java development. He personified the MedPay death spiral.

"Once you get to a certain point of being overloaded, you lose all sight of how long it's going to take to get things done," he explains. "Nothing ever gets completed because you're running on 10 different treadmills, and everyone has a glazed look."

About six months into the project, the team decided to seek some relief by outsourcing the existing payment system, which was causing much anxiety on the business side.

But trying to get that relationship under control ate up six more months. "We kept getting interrupted," Cahoon says. "We'd be missing files and checks. It just kept growing. It was like a monster movie."

And just when it seemed things couldn't get any worse, they did.

Last December, almost a year into the project, Hitz programmed for 105 hours straight in a last-ditch effort to get the graphical user interface and database connections in Java to work. He failed. "It was one of the low points for me," he recalls.

Giving up on Java was "devastating for everyone," Hitz says. "I remember Rob announced it to the group, and you could see the eyes roll."

If IT had any credibility left among the business team members, dropping Java killed it. "You heard all of these great things about Java, and all of a sudden we make the change back to Oracle," says Cahoon.

Worst of all for Norris, he had to tell his boss. "The CEO was giving me a lot of pressure, and I finally had to say that we're not a few weeks away from completing this; we're sort of starting over."

As MedPay came unglued, two things kept Norris sane. One was the knowledge that, for all its ugliness, the foundering project was an aberration. All the other projects in IT — from data marts to online service centers — were coming in on time and on budget and leaving a trail of happy customers.

The other ray of hope was the dawning of a new strategy. Norris realized that the same few people were doing all the work as well as managing the outsourcing and dealing with other side issues that came along. He delegated management of the outsourcer, and when they immediately felt some relief, he saw the light: The key to MedPay was to *break up the whole thing.*

They would break MedPay into nearly two-dozen discrete modules, each of which could be managed as a rapid development project. The modules wouldn't need formal requirements or heavy documentation, because each would be a real RAD project: small and quick.

Each module would be assigned to a programmer who would work directly with the businesspeople. Norris hired from a short list of programming superstars who had good rapport with users, could work independently and wouldn't be discouraged by the past. "The rumor in the company was that MedPay was a meat grinder that chews people up and spits them out," says Dave Hoffman, who became chief programmer at that time. "I was scared to death, but I took it as the ultimate challenge."

Deadline Insight

Deciding on the size of the modules was another eureka moment. Norris had come upon some studies that concluded that regardless of size or complexity, projects are almost never identified as late until three weeks before deadline. "I had seen that happen so many times I practically wept when I read it," he recalls. "I said, 'That's it!' "

Norris decided that no module should take longer than three weeks to complete. That would mean that if there was trouble, he would know almost immediately and could act. He asked module managers every day whether they were going to meet their deadlines. "As soon as there was any hesitation, I'd find out why," he says.

The three-week schedules gave programmers permission to refuse other work. "When you have months, you have slack, and you know it," Norris says. "But when you've got three weeks, and somebody asks for something else, you know the answer is no."

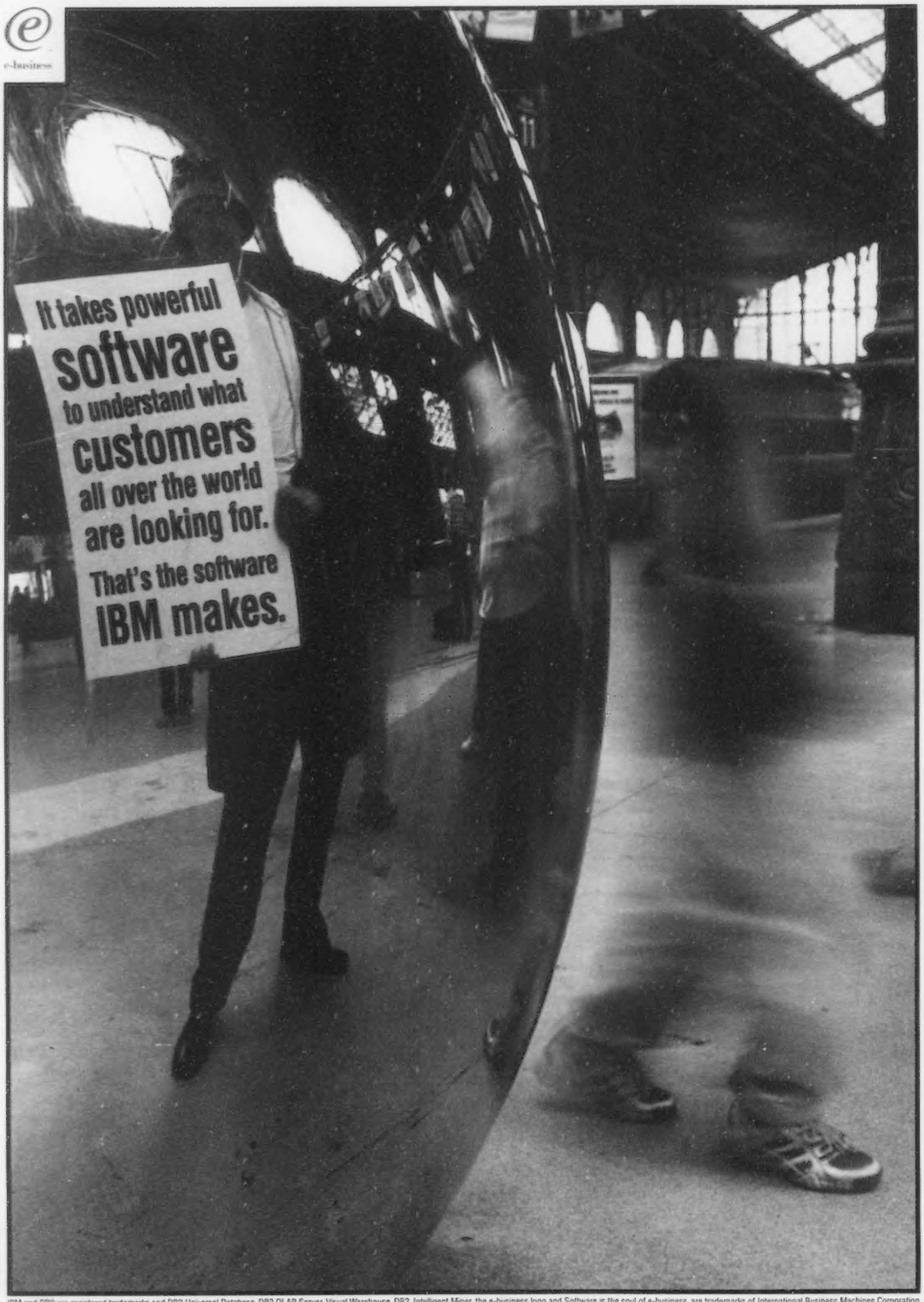
Upon completion, each module would be integrated into existing systems and put to work to the extent possible. That would lessen the complexity of final integration. The combination of all the modules — the overall project — would be managed formally by Norris, who took over that role to allow Hitz to focus on providing technical leadership.

Getting done on time this time required a careful balance of fixed and flexible approaches. The scope of the overall project, the definition of each module and the project deadline were nearly set in stone. "But out of sheer necessity," Norris says, "everything in the middle had to be dynamic."

For example, sometimes an oversize module had to be broken into two, staff had to be juggled or the scope of a module had to be shaved. The key, Norris says, isn't to build the perfect plan but to continually adjust the plan you build. And they did. They revised the plan 13 times, but the overall deadline never budged. "The fluid nature of our planning allowed us to still meet our goals instead of giving up," he says.

And the team began to work smarter.

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KATHLEEN MELYMUKA/MS. MIS

English *and* calculus? You *can* have it all

DURING A RECENT conference of successful women in technology who were trying to figure out how to attract more women to the field, I was struck by a recurring comment. Speaker after speaker — all successful technologists and engineers — mentioned that she had never felt math and/or science was her strong point.

Many said they had to struggle with math coursework. But once they "got through the math" and into their careers, they enjoyed and excelled at their work.

This was an eye-opener for me. I had always assumed that the women who became engineers and technologists were math wizards like my college roommate, who once dreamed she was a square-root symbol. I thought the lack of that special bent is what points folks like me to other fields. It was incredible to learn that they, like me, had to struggle with trigonometry and didn't particularly like it, and fascinating to learn that having "got through the math," they found that everything changed for the better.

I think that women who don't enter technology fields don't know this. My guess is they think that when it comes to technology, career choices are either/or decisions. You get on a math/technology track and grow up to be a geek, or you get on a liberal arts/humanities track and grow up to be a human.

Even girls who have been mentored or otherwise clued in that there is life after math in technology must take a leap of faith: Give up what you like, what comes easy. Commit to studying subjects you find difficult and unenjoyable. Hope that after spending college on the geek track, you'll be able to go back to being your real self in a high-tech, high-salary, highly rewarding career.

Tough call. No wonder five out of six engineering students are males who tend to like this stuff anyway. And with the Bureau of Labor Statistics predicting that the demand for computer engineers will more than double by 2006, a lot of girls who could make the cut are in a position to miss out big time.

Smith College in Northampton, Mass., wants to do something about that. This fall, it inaugurated the Picker Program in Engineering and Technology — the first engineering program in any women's college in the country. Picker is different from other engineering programs: It's embedded in a liberal arts curriculum. That approach should make the leap of faith a little less harrowing for women. True, they will still have to dive into the uncertain world of math and science, but they won't have to give up the humanities.

Smith understands the needs of corporations as well as the needs of women. "When we talked to CEOs about what they wanted to see in engineers, they all said the same thing," says Smith President Ruth J. Simmons. "There's a plentiful supply of people trained narrowly and deeply. Don't create the same kind of engineering and technology program that's being offered around the country. Give us the leaders we need in technology."



KATHLEEN MELYMUKA is Computerworld's senior editor, management. Contact her at **kathleen_melymuka@computerworld.com.**

Smith's surveys of managers indicate that there is a huge demand for technologists with strong liberal arts skills like writing, speaking and analytical thinking. "The market is in dire need of engineers who are well-grounded in their understanding of the human condition," says Domenico Grasso, newly appointed chair of the Picker Program.

Traditional engineering schools are often too tightly focused on technology to provide these skills, but Smith has no history to bind it except for its historic dedication to women's education. It has produced its share of stellar alumnae, including Gloria Steinem, Betty Friedan, Nancy Reagan and Julia Child. It can give the market — and the women — what they want and in the process give women a boost up the engineering career ladder. "We thought that an engineering program grounded in a liberal arts college could set new standards for technology and engineering," Simmons says. "That's what we are attempting to do."

Smith's liberal arts approach has worked in the past. Between 25% and 30% of its students graduate with science majors — more than twice the national average for co-ed colleges. And some of those courses are so strong in both science and humanities that they require five years to finish.

The Picker Program is a small step in the right direction. ◗

Continued from page 43

Project From Hell

Aside from its regularly scheduled meetings, members held 15-minute stand-ups every morning to toss around issues and keep in sync. "That was a morale booster, because you could direct any issue to whoever had to look at it, and when you came back the next morning, you'd know" the response, Cahoon says. "We started on an upswing."

The team began to deliver completed modules almost immediately, but it took until April for the mood to lighten. "Things started to ease up a bit as a firmer picture of the system started to develop," Hitz says. "But it took a long time to gain back that credibility."

In the end, the project was completed on schedule and went live in July. "We're very, very proud of the system we built," Norris says.

MedPay has virtually eradicated duplicate payments. Billing turnaround time has improved from about a month to days, and where there used to be a backlog of tens of thousands of bills, now there is none. The system is enabling millions of dollars a year in further savings, because it allows flexible contacting and discounting with providers, Norris says.

Looking back, both the IT staff and the business folks agree that the methodology they painstakingly discovered is the best way to manage this type of project. "Our early failure on the project was an expensive lesson, but the quality of the education was priceless," Norris says. "There will always be a certain amount of chaos in rapid application development, but we're supremely confident now in the method to our madness." ◗

Lasting Lessons

Here's what the IT project team at Pinnacol Assurance learned from its experience with its new medical payments system:

- Do your homework. Explore all platform options thoroughly. Don't assume your current platform can't cut it.
- Resist the lure of bleeding-edge technology. Make sure your staff has the expertise it needs to handle the chosen platform.
- Take a modular, rather than a monolithic, approach. If the project is big, break it up into discrete chunks.
- Minimize the size of each module to fit in a three- to four-week time line.
- When possible, integrate the modules into existing systems as you go; don't wait to do it all at the end.
- Keep definitions and the overall project deadline static; how you get there has to be dynamic.
- Revise your plan. Don't throw it out and wing it.

AT A GLANCE

Pinnacol Assurance

Headquarters: Denver

What it is: A self-funded, nonprofit, quasi-public agency that ensures that all employers in Colorado have access to workers' compensation insurance. Largest provider of workers' comp. insurance in Colorado.

Share of Colorado workers' comp. market: 38%

Insured businesses: 50,000

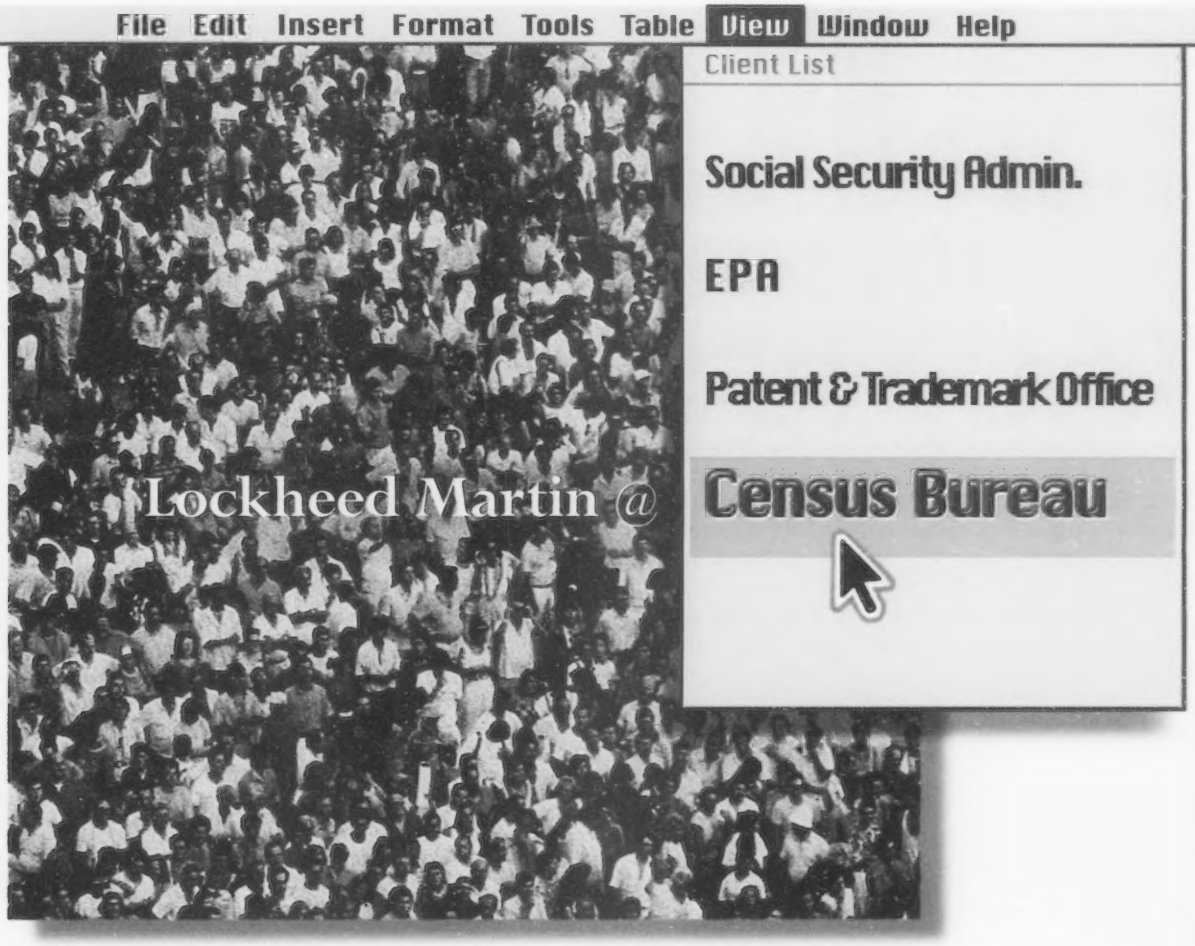
1998 earned premiums: $176.4 million

Employees: 465

IT employees: 46

IT budget for 1999: $5.3 million

MISSION: Who are "We The People"? And how many of us are there? Two hundred seventy-five million, three thousand and six. Or maybe seven. We won't know for sure until census-takers canvass the nation in the year 2000. It's a job they've been doing since 1790. This time, it will be made easier by a technology system developed by Lockheed Martin.



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SUCCESS: When census-takers finish, one billion pieces of paper must be tabulated in just over one hundred days. Speeding this process along will be a system that turns paper information into digital information— all with commercially available technology. To see what Lockheed Martin IT expertise can do for you, visit www.lockheedmartin.com.

TOP 10 RETENTION TACTICS

Successful retention starts with intelligent recruiting. Although the pressure is on to fill the skills gap, before you make a job offer to a prized candidate, explore "whether a person is right for your culture," says John-Mark Stephenson, professional resource director for information technology consultancy Baker Robbins & Co. in Houston. Otherwise, you expedite only departures.

A holistic strategy maintains fidelity. "In IT, we're predisposed to quick patches," Stephenson says. "That works for software, but the patch approach to retention is a surefire route to high attrition."

Following are 10 tactics for your overall hiring and retention plans. BY LESLIE GOFF

■ **Standardize the Annual Review** Turnover at Airborne Express' Information Technology Services (ITS) group in Seattle dropped 4% in one year after the company shifted from staggered salary reviews on employee anniversaries to an annual departmentwide review period, says Lisa Reinitz, recruiting manager. "By doing it all at once, we can be sure increases are done fairly," she explains.

It also helps to put everyone's salary in context. "You can lose several people over one [raise] if the salary is too high," says Eileen Cassini, director of IT services at hotel and casino chain Harrah's Entertainment Inc. in Memphis.

■ **Let Them Dream It, and They'll Be It** Bob Taylor, a 12-year veteran at Charles Schwab & Co. in San Francisco, was considering leaving the company last December. He needed "to change things and get charged up about work again," he says. So, his boss allowed him to invent a new job.

Taylor devised a position combining his technology and business skills, becoming an organizational troubleshooter. "The key to my staying was to innovate my own job," says Taylor, now vice president of the mobile trading project at Schwab's Electronic Brokerage group. "To energize someone, let them work on what they absolutely love."

■ **Allow Creativity to Bloom Without Fear** "I've never been in a meeting where someone put something on the table and people scoffed," Taylor says. "And, I've come up with some wacky things." Four years ago, Taylor led a project to develop a mobile phone for Schwab traders. They built the infrastructure, the software and the phone itself, but never got past beta tests because the traders "didn't like the big clunky phones," Taylor says.

"But I'm still here, and our work spawned the wireless initiative we have now."

■ **Cultivate Access to the Top Dog** Contact with top executives builds pride. At Bertelsmann Music Group in New York, former CIO Scott Dinsdale would ask the CEO to have a sit-down with his end-user support staff. "People in that position usually wouldn't expect that," says Dinsdale, now executive vice president and chief technology officer at online music site FirstLook.com in Los Angeles.

■ **Establish a Distinct IT Culture** "You can be in a horrific [company] and walk into IT and see happy people laughing and whistling while they work," Stephenson says. "That flows out of departmental leadership." Give everyone a desk toy. Throw on-the-job parties. Airborne's ITS group springs for ice cream sundaes when it makes 99.98% availability on its global mainframe, Reinitz says. It may sound trivial, but it's often the little things that count for a lot.

■ **Equitable Bonuses** Bonuses for individual performance or team-project milestones have their place, but the best program to foster loyalty is profit sharing.

"It appeals to everyone and makes them feel like part of the business," Stephenson says. Harrah's swapped its IT project bonuses for profit sharing, "because not everyone is assigned to new projects," Cassini says. "Support and operations staff weren't being recognized." With profit sharing, everyone is eligible.

■ **Dress for Success** "In IT, business casual is important for retention — more so than in other business units," says Barbra Cooper, CIO at Toyota Motor Sales USA Inc. in Torrance, Calif. But within Toyota's Japanese corporate culture, "we've always [had] strong formal dress codes and standards," Cooper notes. She has engineered a gradual relaxing of the rules: IT staff confined to the IT building can wear slacks and a collared shirt. Corporate rules apply to anyone interacting with business users.

■ **Constant Learning** If IT professionals suspect their skills will go stale, they'll be gone faster than you can say "SAP R/3." "The one thing that will scare any techie out of his wits is . . . becoming obsolete," Stephenson says. Create individual comprehensive training and development plans, including just-in-time, on-the-job techniques.

"Being in an environment where they're always learning is more valued than salary," says Greg Alexander, senior vice president of management information systems at retailer The Sharper Image in San Francisco.

■ **Don't Worry, Be Happy** Keep employees sane with flexible hours and on-site services that cater to their off-hour needs. "It's important that everyone has flexibility and they're not working long hours consistently," says Alexander, who allows staggered arrivals and departures and offers comp days when projects demand long hours.

Schwab offers a range of concierge services, from dry cleaning to photo finishing. "You need an infrastructure conducive to a work/life balance," Taylor says. "It reminds employees that you want them to be happy."

■ **Recruit From Within** Some of the most faithful IT professionals are those pulled from the business side and trained in IT. Alexander says, "When you're willing to take a person on with no [IT] skills and spend time training them, there's a lot of loyalty there." It also ensures that you're getting a good cultural match. "If you have coincidental sets of values," Dinsdale says, "you'll have higher retention."

Goff is a freelance writer in New York.



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a Higher Calling

IT professionals driven by perks and paychecks might not immediately think of nonprofit organizations. But those who work for them say that though the pay isn't always competitive, technologies are current, and personal payoffs are priceless

By Sharon Watson



Supporting the leading cancer research work of Dr. George Papanicolaou (above) is about as mission-critical as IT can get, notes American Cancer Society's Renee Herr

Like many a harried information technology professional who puts in long, hard days, Mike Sturdivan sometimes starts to wonder if all the work is worth it. But recently the answer stared him in the face, literally, a thousand times over.

As director of systems administration at World Vision Inc., an international relief agency based in Federal Way, Wash., he was reviewing new digital photos for use with the information folders World Vision produces for patrons who support children in underdeveloped nations.

"There were thousands of photos, and none of the children were smiling in them," Sturdivan says. "That breaks my heart — and it reminds me why I'm here, that I'm seeing something good coming out of my job."

That sense of knowing they're doing good in the world while they're writing code or optimizing networks or creating strategic technology plans is cited again and again by IT professionals who work for nonprofit and humanitarian organizations. Many left high-powered careers in the for-profit world behind, and they say it was well worth it.

"There's no better decision than to marry your professional talents with something you hold dear to your heart," says Doug Barker, vice president and CIO at The Nature Conservancy in Arlington, Va. The Nature Conservancy tries to save endangered species and ensure ecological biodiversity by buying and managing tracts of land all over the world.

Nonprofits on the Web

Sources of nonprofit job information:

www.nonprofitcareer.com
Information clearinghouse on nonprofit organizations; job listings

www.nonprofitjobs.org
Job listings

www.nonprofit.com
Site of the *Chronicle of Philanthrophy*; job listings

www.nptimes.com
Site of *NonProfit Times*; job listings

Barker left Andersen Consulting, where he had worked with nonprofit groups, to join the Nature Conservancy in 1993. He had been advising the organization about what type of CIO it should look for — and found himself being considered for the job. He hasn't regretted taking it.

"A career in a nonprofit organization can be just as exciting, challenging and rewarding as one in the for-profit world," Barker says.

Nonprofit work doesn't mean working with second-rate technology, many nonprofit IT staffers say. CIOs at nonprofit organizations say their boards increasingly understand that strong IT support is critical to their missions. "When I first started, we didn't have the notion that downtime could be costly," says Renee Herr, managing director for computer systems and services at the American Cancer Society in Atlanta.

> In a nonprofit organization, you have the opportunity to live what you believe in at work.
>
> KARRY HEBERT, WORLD VISION

Herr had worked in several for-profit industries and as a consultant before joining the American Cancer Society. She says she wanted to be challenged and to own a project from start to finish. Helping the organization see how IT could support its mission met those criteria, and today, Herr says, her department is considered mission-critical and funded accordingly.

Other CIOs echo her remarks. And to carry out their missions, nonprofit entities are using many of the same technologies found in the for-profit world, such as frame-relay networks, virtual private networks, call center applications, enterprise resource planning systems, Lotus Notes development, Web sites, e-commerce and data warehousing technologies.

The applications of these technologies are as complex as any in the for-profit world, say nonprofit IT staffers. The American Cancer Society is developing a strategy for using e-commerce to fulfill information requests more quickly and fully, as well as data mining techniques to run more targeted fund-raising campaigns, Herr says.

The Nature Conservancy is nearing the end of a three-year project to consolidate approximately 70 fund-raising databases in regional offices. These will be converted to a centralized Oracle Corp. database running on HP-9000 Unix servers. Conservancy staff in more than 300 locations around the world will access the database in several ways, including via Citrix Systems Inc.'s WinFrame servers.

"The work has given me a lot of skills people are looking for," says Dean Hill, a programmer/analyst who has worked on the database project. "I'm not insecure about my career path — but I like it at the conservancy."

Similarly, the chance to tackle an enormous technological challenge that happened to dovetail with his own interest in developing nations led Marty Kagan at Cisco Systems Inc. to lobby for a spot with that company's NetAid project. When Kagan was offered a full-time position as NetAid's program manager, he jumped at the chance, even though it meant giving up a well-defined career path at Cisco. "A lot of people discouraged me from taking the position," says Kagan, who knew the day NetAid launched, he'd be out of a job.

But the challenge of building a Web site and network capable of sustaining millions of simultaneous, prolonged hits was exciting, Kagan says. He was also drawn by NetAid's long-term goal of using electronic marketplace techniques to match development and relief agencies around the world with the goods, services and expertise they require.

For example, a university student with agricultural expertise might browse the NetAid site and offer his expertise to an African agency with a farming challenge. Or a manufacturer or business with a surplus of goods or equipment could be matched to an agency in need of the same. "This work has gotten me out of the engineering closet," Kagan says, noting that his previous projects had a narrow focus, whereas he has seen his work affect dozens of agencies around the world through NetAid.

To accomplish his goals, Kagan has worked twice as many hours on NetAid as he did in his previous engineering position, without increased financial compensation. Yet he says the payoff has been huge. "There's been incredible personal satisfaction," he says. "There's the feeling I did something really useful, instead of just adding another dollar to earnings per share."

Though many say the not-for-profit technology experience is on par with that in the for-profit world, all agree that it isn't the sector in which fortunes are made. "The nonprofit world is definitely not the place to go if your primary driver is making big money," says Barker. And money is definitely *not* their driver, say nonprofit IT workers.

IT Salaries at Nonprofit Organizations

JOB TITLE	NONPROFITS	NATIONAL AVERAGE
CIO/vice president of IT	$83,000	$132,000
Director of IT/MIS	$56,000	$90,000
Director of IT operations	$56,000	$83,000
Senior systems analyst	$54,000	$62,000
Programmer/analyst	$54,000	$49,000
Communications specialist	$50,000	$57,000
Computer operations supervisor	$43,000	$49,000
Network administrator/analyst	$42,000	$53,000
Technical support manager	$37,000	$49,000
PC/technical support specialist	$37,000	$38,000
Lead computer operator	$34,000	$39,000
Computer operator	$30,000	$32,000

SOURCE: COMPUTERWORLD'S 1999 ANNUAL SALARY SURVEY, PUBLISHED IN SEPTEMBER

"You can see what your work is doing," says Brian Dorlester, network services manager at The Nature Conservancy. For instance, he recently took a field trip to a conservancy bald eagle nesting grounds sanctuary.

Still, Dorlester says he doesn't have to make a choice between paying his rent or working for the conservancy. And nonprofit CIOs say the salaries they offer to staffers are competitive, if not top of the line. Any salary shortfalls can usually be made up with good benefits packages, a good work environment and other perks. For example, the American Cancer Society is creating professional growth paths for IT staff and offering training along those paths. Most organizations offer flexible work hours and telecommuting.



Keeping your clients satisfied rarely gets more rewarding than when those clients are hungry families in Mozambique, says World Vision's Mike Sturdivan

In addition, IT employees may get directly involved in the mission of a particular organization. IT employees have spent time working in World Vision ministries, says Karry Hebert, CIO and vice president for information systems at the agency. IT staff at the American Cancer Society get very involved in events such as its Relay for Life or World Cancer Conference, says Herr.

Herr explains that the Relay for Life involves cancer survivors and other people reading the names of cancer survivors — as well as those of cancer victims. "The reading of the list can go on for hours," says Herr. "If that doesn't get your attention about our mission, nothing will."

With their work so tightly tied to a specific cause, many nonprofit IT employees suggest that job-seekers thoroughly research an organization's goals and projects to see if they're comfortable supporting those activities.

While colleagues in a nonprofit organization may share similar beliefs and values, that definitely doesn't mean such organizations promise a stress-free work environment, CIOs and other IT specialists say. They emphasize that, like many IT departments in the for-profit world, they have big visions and many projects but limited time, money and human resources with which to complete them. "The complexity here is phenomenal," Dorlester says. "We're trying to engineer as few solutions as possible to serve as many needs as possible, and that can be a daunting task."

Still, those putting their IT skills to work for nonprofits say feeling good about the work they do each day tends to far outweigh workplace frustrations and stress.

"In a nonprofit organization, you have the opportunity to live what you believe in at work," says Hebert. "That's something the for-profit world can't offer."

Watson is a freelance writer in Chicago.

Benchmarking

BY THOMAS HOFFMAN

DEFINITION

Benchmarking is a measurement tool used to gauge a company's operating performance against that of competitors to identify best practices and make improvements. Examples within corporate IT include measuring the costs of supporting a data center or network infrastructure.

YOU THINK you run a pretty lean information technology shop. You try to keep costs down, hire and retain the best talent you can afford and provide the best possible services to your end users.

But is your IT organization running as efficiently as it can? Do you know, for example, whether your organization's data center or help desk costs are in line with, or better than, those of your competitors?

That's where benchmarking can help. "There's an old saying in business: 'You can't manage what you can't measure,' " says Dave Burkett, president and CEO of Compass America Inc., a benchmarking service provider in Reston, Va.

Measure for Measure

Benchmarking can play different roles, depending on how you approach it. From a historical perspective, benchmarking might mean trying to measure and compare the costs to support an IT function such as PC support or a call center. Companies can also use benchmarking to measure how much it costs an IT department to achieve a specific goal, such as the cost of producing *x* number of invoices each day.

The growing pressure of running and maintaining an IT department is making it critical for IT professionals to understand how such functions are analyzed financially, says Howard Rubin, a research fellow at Meta Group Inc. in Stamford, Conn., and professor of computer sciences at Hunter College in New York. IT shops "aren't just measured on their total cost" of [acquiring technology], but also on their ability to satisfy internal and external customers and deliver returns on IT investments, he said.

So, for example, if an IT department at a big bank is asked by the accounting department to build a new payroll system within six months that will support 25,000 employees, IT people working on that project "absolutely have to know the constraints" of what they're being asked to deliver and how quickly, Rubin notes. In this example, says Rubin, the bank could use benchmarking to determine how long it typically takes like-size banks to build and deploy their own payroll system or install a third-party payroll system. The bank could also use benchmarking to learn "best practices" or effective techniques that helped speed or simplify the rollout of a payroll system at another bank.

As business departments dole out more money for new projects, IT shops are finding that they have to be more competitive with outsourcing vendors and services firms such as Electronic Data Systems Corp. in Plano, Texas, and Cambridge Technology Partners Inc. in Cambridge, Mass.

For example, in 1997, when Duke Power Co. merged with Pan Energy Corp., the companies reached an understanding that the line organizations of the new Duke Energy Corp. would receive their information services from the information management department of the combined companies. After two years, the business units would be free to choose their information services from within the Charlotte, N.C.-based company or from external service firms.

Several months before the end of the two-year period, Duke's information management department surveyed end users about their satisfaction levels and their plans to use the department's services.

The result: end users "were generally happy" with information management's services and "had no plans" to outsource any of its support, says Steve Froneberger, manager of financial and administrative services at Duke Energy.

After using Meta Group to help it benchmark the unit prices of its products and services against like-size service providers, Duke learned two things: It was very good at providing low-cost mainframe, workstation and telecommunications services to its end users, but it found it difficult to obtain benchmark costs for server products and services, Froneberger says.

Part of the problem, he says, is that there are no "standard approaches" in determining the costs of supporting those environments.

A popular form of benchmarking often involves comparing the costs and processes of supporting a particular operation between companies in the same industry, such as retailers with 200 to 500 locations and roughly $1 billion in annual revenue. Benchmarking against competitors or like companies, such as electric and gas utilities, offers several benefits. For starters, companies can discover breakthrough techniques or best practices in delivering services or support — for example, the average cost of maintaining an end user's workstation.

"A lot of ideas [for process improvements] don't make it through an organization because the person who presents them doesn't have enough [clout]," says Mark Czarnecki, president of The Benchmarking Partners Inc., a Houston consultancy that arranges benchmarking between companies. "Nothing works like going to your boss and saying, 'I checked with XYZ Co., and they're doing this, and it really works.' "

Still, if your company is a heavy-equipment manufacturer with a single-location machine shop, says Czarnecki, "it doesn't make sense" to try to compare the costs of supporting a replenishment system with those of a company like General Motors Corp., which has hundreds of locations.

Outside Help

Because it's expensive, time-consuming and difficult for companies to develop their own benchmarks against competitors, many firms rely on outside help from such vendors as Compass America and Gartner Group Inc. in Stamford, Conn.

Some benchmarking experts would argue that efforts to measure one company's performance against others is an apples-to-oranges comparison. "Business processes at Wells Fargo Bank might differ from those at Bank of America Corp. How does that information flow? How is that transaction captured?" said Bob Simko, executive director at International Technology Group, a consultancy in Los Altos, Calif.

Instead of comparing IT metrics, says Simko, companies should try to measure business metrics such as how many mortgage loans are past due or the costs of supporting a retail location in Phoenix. ◗

What Gets Benchmarked?

Functions whose costs or value are frequently measured against those of competitors' IT organizations:

- ✔ **Providing help desk** services to end users.
- ✔ **Mainframe services** to end users (sometimes measured by the costs and number of MIPS, or millions of instructions per second, of computing power spread across a finite number of end users).
- ✔ **Leasing, owning, licensing or rental** of data center equipment and related software.
- ✔ **Supporting each workstation** within a division or across a company (including hardware, software, service and support costs).
- ✔ **Telecommunications services** (including leased-line costs, equipment, and long-distance and local carrier costs).

SOURCES: COMPASS AMERICA, RESTON, VA.; META GROUP INC., STAMFORD, CONN.

■ *Are there business terms you would like to learn about in QuickStudy? Please send your ideas to quickstudy@computerworld.com.*



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WE FOLKS IN IT have never been patient when it comes to acquiring high-tech products and services. Most of the time, we think the acquisition and negotiation processes necessary to do the deal right are too time-consuming. We want the latest stuff, and we want it now!

With the advent of e-commerce, the urgency of acquiring IT for the Internet has become even more of a factor. It seems like — all of a sudden — all of us want to transact business on the Web immediately. Getting e-commerce products to market quickly can be a major differentiating factor in a corporation's market space.

This speed-at-all-cost attitude adds up to a risky proposition for the customer, but in this environment, many believe it's even riskier to lag behind. So now we're really rushing into deals.

Adding to the chaos, the market is full of unproven or barely proven "solutions" for Internet infrastructure and middleware. What's more, it seems like there are countless start-up dot-com providers, consultants, developers and "experts" with little experience, no track record or little substance who are nevertheless getting big bucks from crazed customers who are desperate to get moving.

Even the big players are seeing panicked customers lower prudence on their list of priorities.

Recently, during a presentation to a major brokerage firm, an IBM e-commerce executive was asked whether IBM was willing to accept total liability for problems in the areas of the project where it would have complete responsibility. He responded that even though IBM had done substantial deals with other major brokerage firms and many e-commerce deals in other industries, he hadn't once been asked that question.

Is that unbelievable? Think about it. The amount of liability in e-commerce transactions, especially in the brokerage business, is staggering. Are we customers in such a rush that we aren't concerned about making the party that supplies the technology responsible or accountable? Are we committing some sort of professional malpractice?

Later, off-line, the IBM executive intimated that given the right solution, almost all issues other than speed of implementation seemed unimportant to e-commerce customers.

Time will tell if the risks were worth it. Many feel it's better to get anything into the marketplace instantly, rather than take time to make sure the deal is a good one or a safe one. But without proper protections in the contract to ensure we're getting a reliable working solution for our money (and that we're not taking all the risk), many of us are going to experience technical so-called solutions that are either late, incomplete or just don't work. And we'll still have to pay for them, just like we did before. Only now, thanks to Internet time, we get the awful news quicker.



JOE AUER is president of International Computer Negotiations Inc. (*www.dobetterdeals.com*), a Winter Park, Fla., consultancy that educates users on high-tech procurement. ICN sponsors CAUCUS: The Association of High-Tech Acquisition Professionals. Contact him at **joea@dobetterdeals.com.**

Update

An in-process story that hit a nerve with many readers was the auto manufacturer being held up by a software vendor [Business Advice, July 5].

The customer was being charged an upgrade fee, even though it wasn't in the contract. There had never been upgrade fees before, and the subject hadn't even been brought up. The good part was that after aggressive negotiations, the upgrade fee demanded by the vendor dropped from $154,000 to $49,000. As I promised to tell you, here's how it all ended: The vendor (or should I say "the robber?") prevailed; customer management decided litigation would cost more than $49,000. (My guess is that the vendor knew that.) The customer cut the check and vowed to dump the software in two years.

There were a few small victories for the customer. As part of the whole deal-review process, the customer found it had been overcharged for maintenance. After more heated discussions, the vendor returned $15,000 to the customer.

What's more, an addendum was negotiated that capped all future upgrade fees at $4,900. The customer doesn't expect to need this protection, but as it learned, plans can change overnight. As with any contract, it's better to be safe than sorry.

For the complete story on the robbery, look for back columns on my Web site at *www.dobetterdeals.com/computerworld.*

BRIEFS

Secure Transactions

Visa International Inc. completed deployment of Santa Clara, Calif.-based enCommerce Inc.'s getAccess to manage authentication, authorization and administrative services for Visa OnLine and Visa Marketing Channel. Foster City, Calif.-based Visa also plans to use getAccess to further expand the Web-enabled services it offers to its 22,000 member banks through other Visa OnLine services.

Flood Relief

The Federal Emergency Management Agency awarded Computer Sciences Corp. (CSC) a three-year, $61 million contract to support the government's National Flood Insurance program. Among other things, El Segundo, Calif.-based CSC will provide financial and statistical analyses and process flood insurance transactions, which last year totaled more than $2 billion.

Online Shopping

Internet shoppers spent an estimated $222 million online from Nov. 5 to 10, according to a joint study by Goldman, Sachs & Co. in New York and PC Data Online in Reston, Va. It's a $21 million increase from the previous week.

To name a few popular purchases, the shoppers surveyed spent $11,399,000 on music, $25,506,000 on computer software and $58,803,000 on computer hardware. According to the weekly survey, 90% of online buyers say the shopping experience has met or exceeded their expectations. However, shoppers say they still plan to buy more than 60% of their holiday gifts at stores and 10% through catalogs. The results are based on a survey of 3,108 home-based Internet users.

Health Services

Managed Care On-Line Inc. (MCOL), a health care information technology company in Modesto, Calif., and the Academy for International Health Studies in Davis, Calif., unveiled Global Health Resources.com at *www.global-healthresources.com.* The new site provides international health resources for professionals. A subscription costs $7.50 per month.

End Junk Mail

CircularFile.com has launched an Internet-based service aimed at purging real-world mailboxes of junk mail.

For a one-time $20 fee, the San Francisco-based company will contact the 15 data distribution centers that feed consumers' addresses and telephone numbers to mail processors and telemarketers, to have contact information removed from their lists. By law, the companies must remove the information for five years.

Mining Site

IDS Intelligent Detection Systems Inc. in Toronto has announced the launch of Geo-Portal, an e-commerce initiative designed to serve the $300 billion international exploration and mining industry.

Initially, Geo-Portal will comprise two main sites: GeophysicsOnline.com, which will serve the mining and oil and gas exploration industries and MineOnline.com for the mining production sector.

SNAPSHOT

Some Risks of Internet Banking

Percentage of online banks failing to meet regulatory proposals in key areas:

44%	Incomplete adoption of regulators' risk recommendations.
36%	Insufficient audit coverage of online banking activities.
32%	No policies or procedures to guide cyber-banking activities.
25%	Deficiencies in strategic planning for Internet banking.
18%	No evaluation of written contracts with third-party providers.

SOURCE: U.S. GENERAL ACCOUNTING OFFICE REPORT, BASED ON EXAMINATIONS OF 31 BANKS BY FEDERAL AGENCIES

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intel inside
pentium II

[1]Estimated reseller price for model 390/ENU. Actual prices may vary. [2]NSTL independent study using Winstone Perf. testing, July 1998. [3]SOFRES Intersearch – July 1998. mhz denotes microprocessor internal clock speed only; other factors may also affect application performance. gb – 1 billion bytes for HDD capacity. PCs referred to in this ad include an operating system. IBM product names are trademarks of International Business Machines Corporation. Microsoft, Windows and Windows NT are trademarks of Microsoft Corporation in the United States and/or other countries. The Intel Inside logo and Pentium are registered trademarks of Intel Corporation. © 1999 IBM Corp. All rights reserved.

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TECHNOLOGY

SERVER SURVEY

Compaq may be one of the leading server vendors, but it takes some serious hits from users surveyed by *Computerworld*. When it comes to server operating systems, Sun's Solaris far outranks its rivals — including Microsoft's Windows NT. ▸ 70

MIRROR, MIRROR

Lucent Technologies in Murray Hill, N.J., claims to have the world's first all-optical router that routes and switches optical data using tiny mirrors. It could mean a big boost to network capacity — but not until at least the middle of next year. ▸ 59

MIDDLEWARE BY BAAN

Baan is almost ready to deliver long-promised software that ties together all of its business applications through an integration hub. But users of its ERP software will have to upgrade to a new release before they can take advantage of the integration technology. ▸ 61

WELCOME COMPETITION

Corporate users say they like AMD's Athlon chip because of the boost it gives to application performance — and maybe also because it spurs rival Intel to release new chips more quickly. Now if only AMD could persuade a top-tier PC vendor to use the chip in a corporate PC. ▸ 63

EMERGING COMPANIES

Phone.com plays a dual role in the mobile Internet device space, selling to both carriers and Web developers. Its products pull relevant bits of data from Web sites and feed it to devices such as mobile phones. That could draw IT managers who want to reach their mobile customers with up-to-date Web data. ▸ 65

MUSIC TO YOUR EARS

To help you make the most of your business audio (or that Miles Davis CD), we look at ultraportable speakers, sonically outstanding headphones and a sound card that won't have you digging around behind your PC anymore. ▸ 66

QUICKSTUDY

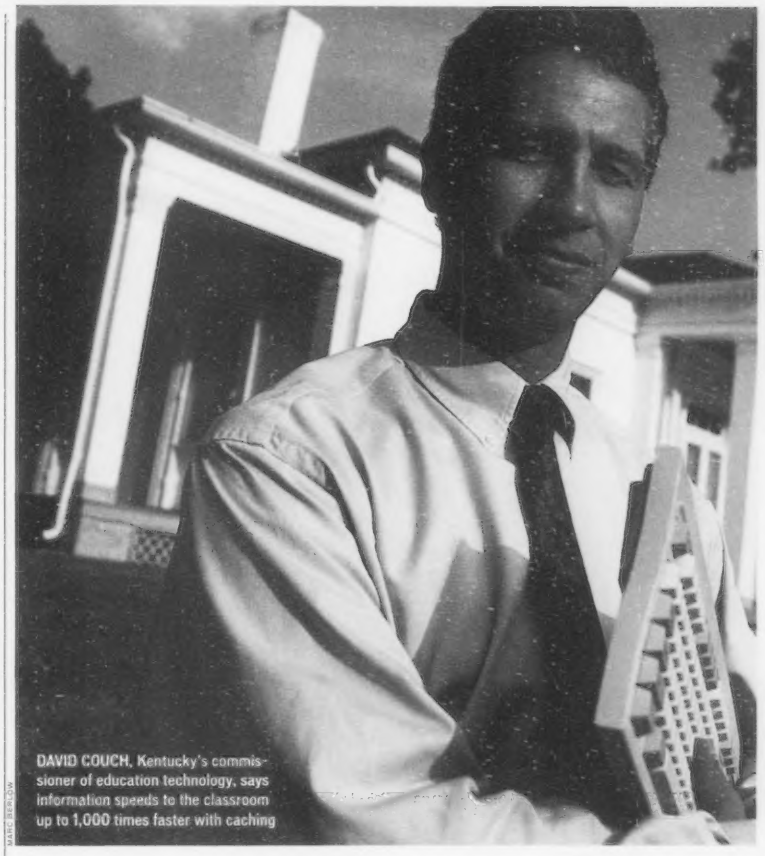
Learn how proxy servers act as bodyguards, protecting client workstations from the wild, wild Web. They can also improve performance by storing Web pages closer to users (see "Caching In," page 68) and hide the internal network from outside scrutiny. ▸ 67

FLASHBACK

In 1995, Windows 95 made a splash, grabbing even the attention of the general public. Java debuted that same year, generating excitement in the programming world. ▸ 74

MORE

Regional Scope 75



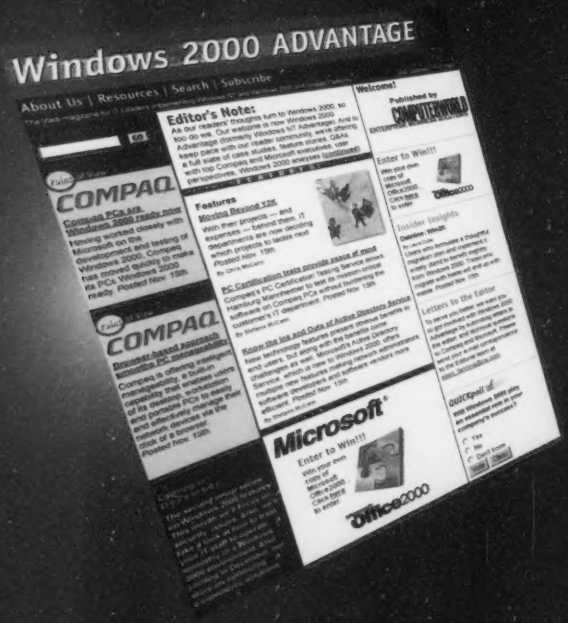
DAVID COUCH, Kentucky's commissioner of education technology, says information speeds to the classroom up to 1,000 times faster with caching

MARC BRODIE

CACHING IN ON WEB ACCESS

WEB CACHING can turbocharge response times by storing the most frequently accessed Web pages closest to the people who need them. But getting the most bang for the buck means knowing when to use a dedicated caching appliance and when proxy server software running on regular server hardware will do.

68







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Doing It With Mirrors: Lucent To Unveil All-Optical Router

But some skepticism surrounds new device's function

BY JAMES COPE

LATE NEXT YEAR, network managers may be able to boost routing speeds on their optical networks by a factor of 16. Lucent Technologies Inc. in Murray Hill, N.J., promises these light speeds, courtesy of what the company claims is the world's first all-optical router, a device that routes data in its natural optical wavelength form without first converting the optical signal into an electrical signal.

Conversion from optical to electrical up to now has been necessary for data routing because routing traditionally has been an electrical process. Address information (the data's destination) is read by the router, which in turn triggers switches that funnel the data to the specified destination. (To maintain clarity on how this works, it's best to think of routing as a process and switching as a part of that process.)

Conversion of electrical to optical or vice versa causes latency, said Fred Harris, network planning director at Sprint Corp. in Kansas City, Mo. And while latency may not pose a big problem in normal network traffic, Harris points out that slowdowns caused by conversion are exacerbated as network traffic aggregates, capturing ever-increasing levels of bandwidth.

The Lucent WaveStar LambdaRouter, which will be available to select customers in July 2000, forgoes the electrical-to-optical conversion altogether. Instead of detecting an electronic data stream and its embedded address information, 256 tiny mirrors in the optical router tilt on their axes to detect and then pass optical wavelengths containing address information and data between 256 input and output fibers.

The prospect of routing data by flashing wavelengths from fiber to fiber may raise an eyebrow or two among network users. Others, though — especially those who work for prospective Lucent customers that already rest their fortunes on data by light, such as large multinationals and telecommunications backbone providers — are likely to show more interest while still maintaining a cautious distance from the perceived glaring risk of something this new.

One information technology executive, for example, questioned whether the Lucent device is a sophisticated cross connector that joins optical circuits or a true router. His concern is that Lucent could be associating the term *router* with a passive junction where fibers are connected and, once set, you leave alone. But an optical router, by definition, would have the intelligence to dynamically detect and decipher the routing directions from incoming wavelengths and also act on these wavelengths to actually distribute the data optically.

There even seems to be some confusion, or perhaps more accurately, skepticism, among industry analysts on what the product is and does. Cathy Gadecki, an analyst at research firm TeleChoice Inc. in Boston, refers to Lucent's device as an "optical-based switch." She also wonders whether physically moving mirrors will win out as the best way of directing data optically, since others, including Cisco Systems Inc. and Nortel Networks, are also in hot pursuit of an optical routing solution.

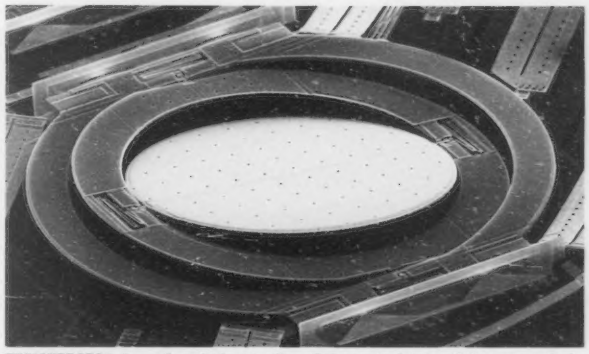
Lucent concedes that it ruminated on how to describe the new device. The company said it ultimately decided to call it a router because it is building in the intelligence for the LambdaRouter to optically read routing (address) information and determine where to send wavelengths that come through the fiber. According to Lucent, this means that it handles routing at the optical level but doesn't yet handle more refined routing functions.

"Announcements like this are a good indicator of where the technology is headed," said Harris. "As bandwidths aggregate and grow, it simply makes sense to have the ability to move these bands at optical levels and to switch them at very high bandwidths."

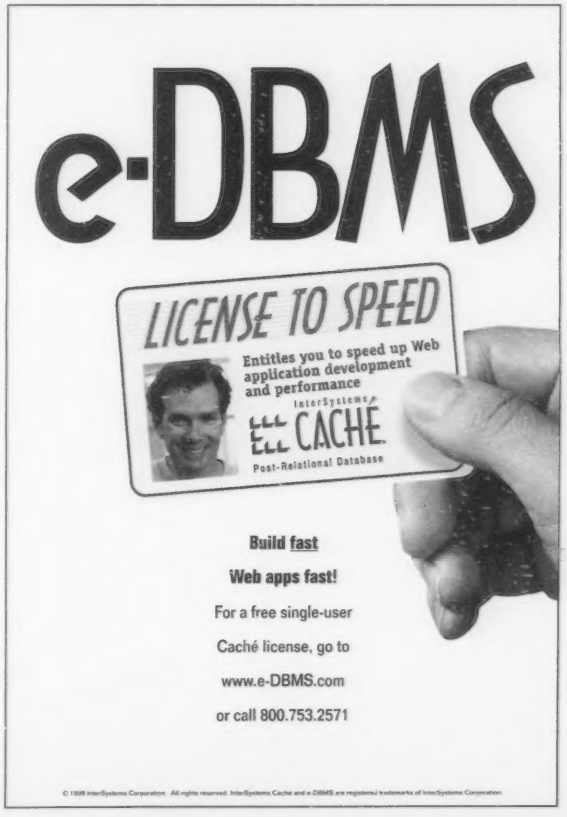
In addition to the conjecture over what the Lucent device is and does, another question remains: Is Lucent, as it claims, the only one out there (or almost out there) with a functioning all-optical router?

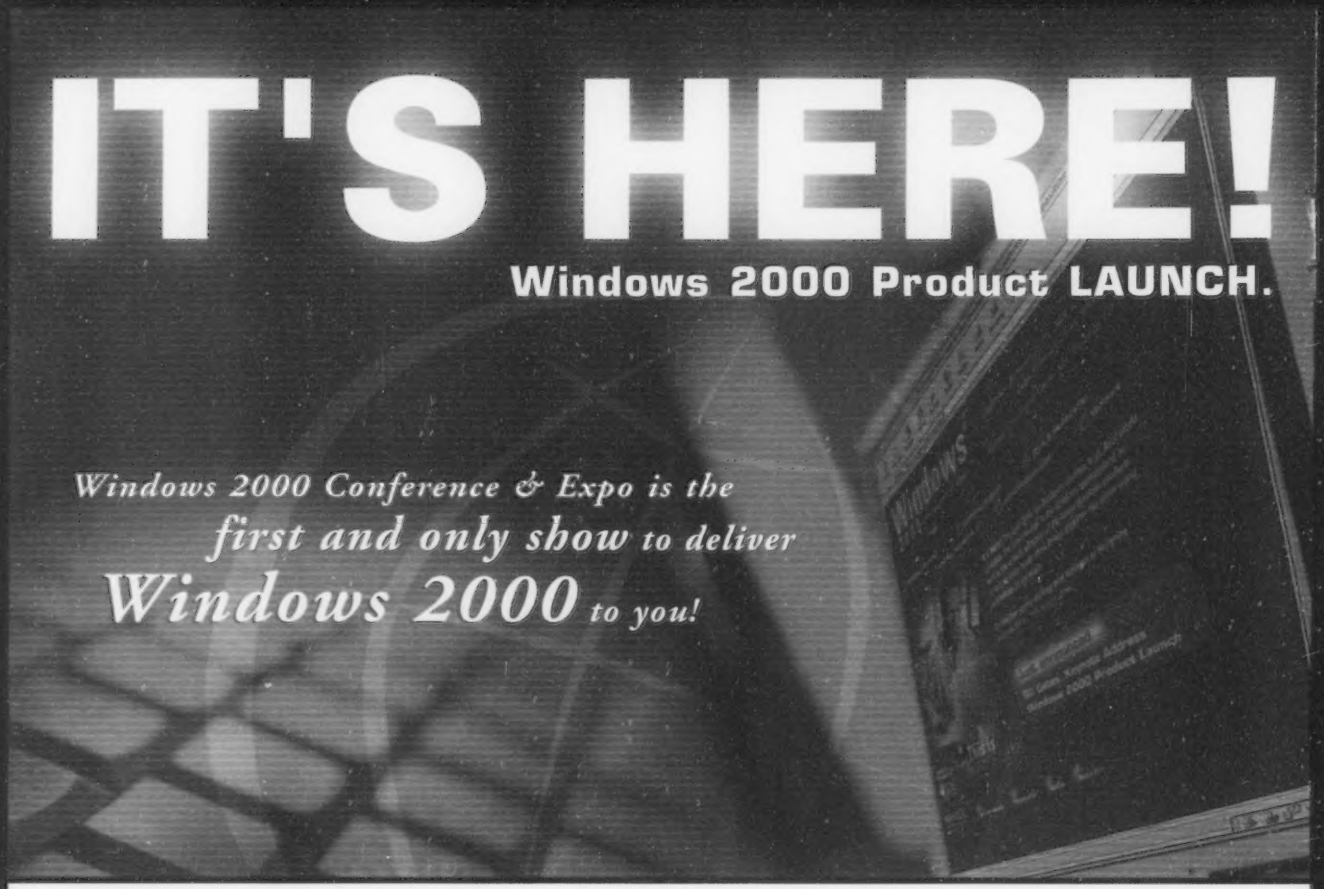
Sources at Corvis Corp. in Columbia, Md., say no, adding that Corvis demonstrated a functioning all-optical router some time ago. But Corvis is tight-lipped on exactly how it works.

Ultimately, who is first with an all-optical router will be less important than which optical routing technology becomes the most widely adopted.



TINY MIRRORS in Lucent's optical router tilt on their axes to detect and then pass optical wavelengths containing address information and data between input and output fibers





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Baan Promises XML-Based Middleware in First Quarter

But customers will have to upgrade to the new version of Baan's ERP software before they can use the tools

BY CRAIG STEDMAN

BAAN CO. is finally about to deliver long-promised software that's supposed to seamlessly connect its business applications, freeing users from the need to build and maintain their own integration links.

At its BaanWorld user conference in Vienna this month, Baan said application-to-application messaging software based on Extensible Markup Language (XML) should be ready for release during the first quarter of next year.

That will provide an integration hub for connecting Baan's flagship enterprise resource planning (ERP) system to add-on applications that the Barneveld, Netherlands-based vendor has bought or developed for jobs such as sales force automation, supply-chain planning and data warehousing.

But users of the ERP software will have to upgrade to a new release, also scheduled for shipment early next year, before they can take advantage of the integration hub technology.

For some companies, that upgrade remains a long way off.

For example, Phillips Plastics Corp., a maker of plastic and metals in Phillips, Wis., plans to augment its ERP system with an advanced production scheduling tool bought by Baan during an acquisition spree that ended last year.

Craig Mey, vice president of manufacturing services at Phillips, said the company needs the add-on scheduler because a more rudimentary planning tool built into Baan's ERP software doesn't recognize real-world production constraints. "It just assumes that you have unlimited [manufacturing] capacity," he said.

The packaged integration promised by Baan would be a big plus, Mey said. But he added that it will likely be another 18 months before Phillips upgrades its Baan IV system to the new BaanERP release that's being developed to work with the integration hub.

At first, the production scheduler — which is now running in test mode at Phillips — is exchanging data with the ERP applications through transfers of flat ASCII files. That works, but it's "not the preferred method" of integration, Mey said.

A-dec Inc., a maker of dental equipment in Newberg, Ore., is also 18 months or so away from moving up to BaanERP, said CIO Keith Bearden.

Going from Baan IV to BaanERP "is a massive upgrade because the whole architecture has changed," Bearden said. "It's kind of a reinstall, from everything we hear."

Next year, A-dec plans to add sales tools that can configure products and generate price quotes for customers. Bearden said Baan's front-office software has the inside track, but A-dec will have to do its own integration work, using programming interfaces supplied by Baan.

Bearden asked Baan how integrated Baan IV and the front-office software are, "and 'not very' is the answer," he said. "You have to write the [integration] code and select the data you want to pull out. It's pretty crude."

Further complicating matters, Baan has had trouble perfecting the data-migration tools needed by users who want to upgrade to the BaanERP software, which was released in an initial version late last year [News, July 19].

Rod Johnson, an analyst at AMR Research Inc. in Boston, said he hasn't been able to find any users who have upgraded to BaanERP so far. Baan's hub-and-spoke approach to integrating its applications "is very well thought-out," but the need to upgrade from Baan IV is a big shortcoming, Johnson said.

None of the upgrade issues affect new users who are starting from scratch with BaanERP. And Baan officials said all the add-on applications can be tied to Baan IV through point-to-point interfaces.

But that doesn't give current users as much incentive to buy multiple applications from Baan, said Joshua Greenbaum, an analyst at Enterprise Applications Consulting in Berkeley, Calif. The lack of tighter integration "has been such an albatross around [Baan's] neck the last two years," he added.

Baan's need for closer ties between the different applications is especially acute because it bought so many of the products instead of developing them internally, Greenbaum and other analysts said. They added that being able to sell an integrated suite is vital to Baan's efforts to rebound from five straight quarters of losses.

But Baan isn't the only ERP vendor looking to improve its integration.

For example, Oracle Corp. last week announced plans to release its own XML-based integration hub in the first quarter of next year. The Oracle Integration Server will include packaged adapters that can connect Oracle's front-office software to its ERP applications and to SAP AG's rival R/3 system.

Denver-based J. D. Edwards & Co. also recently said it plans to develop messaging-based interfaces between its OneWorld ERP software and several add-on applications that it either acquired or agreed to resell earlier this year [Technology, Oct. 11].

SAP already has tight integration links built into R/3 and a mix of companion applications developed internally. But it's also adding XML support to make it easier for users to tie the applications to software developed by other vendors.

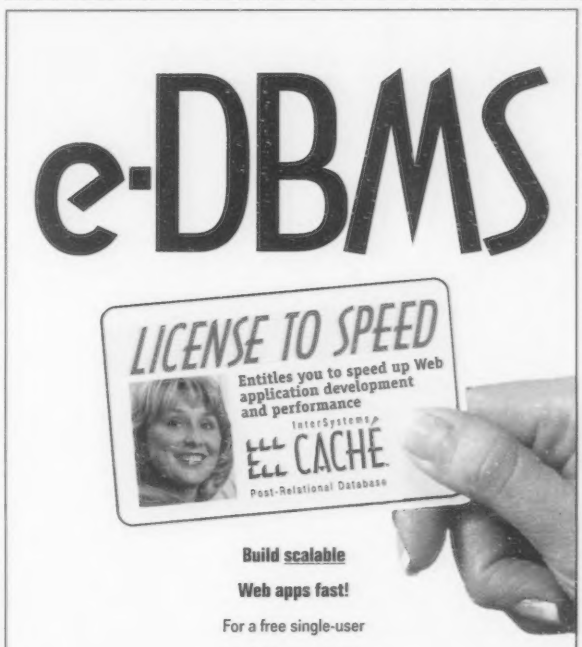
All Together Now

Baan announced the following technologies at its BaanWorld conference:

Baan Enterprise Solutions: An integrated suite that combines a new release of Baan's ERP system with other applications, such as its supply-chain planning tools and sales force automation software. Due early next year.

OpenWorld Integration Framework: The underlying set of XML-based software that links the different Baan applications via a hub-and-spoke messaging architecture. Also due early next year as part of the new suite.

Baan.agility: A Web-based customer service system that can be used to plan installation projects, identify potential performance bottlenecks and download project-management tools, reports and other information. Due this quarter.





DR. SHAHLA BUTLER | IT LEADER

VP, Director AMS Center for Advanced Technologies, a job most of us would die for.

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As Director of the AMS Center for Advanced Technologies, Dr. Butler's mission is to increase our understanding of emerging technologies. "Ours is a commitment to keeping AMS clients on the frontier of IT practice," she says. "To address technologies that will fundamentally change the business landscape."

For example, her team's initial XML research yielded an intelligent agent that collects relevant information across multiple sources then synthesizes, categorizes and disseminates it based on a user's specified interests. "Our Next Generation Enterprise and Business Intelligence & Knowledge Management labs are collaborating now to evaluate emerging non-numeric mining tools," she proudly reports. "We'll be releasing the results soon."

And where does Dr. Butler gain her understanding of emerging technologies? From her peers, at conferences, from the Web and from *Computerworld*. The Newspaper for IT Leaders.

COMPUTERWORLD
THE NEWSPAPER FOR IT LEADERS

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Users Want AMD Athlon Chip in Top-Tier PCs

Some say they like the boost it gives applications as well as the pressure it puts on rival Intel

BY MATT HAMBLEN

ALTHOUGH MOST corporate users and analysts wouldn't consider Sunnyvale, Calif.-based Advanced Micro Devices Inc. a serious threat to Intel Corp., AMD's Athlon has made an impact on the world's largest chip maker.

Some users and analysts report that Athlon delivers equal or superior performance compared with Intel's Pentium III.

But they are more impressed that AMD seems to have prodded Santa Clara, Calif.-based Intel to quicken the release of its latest processors. They said they only wish the top computer makers would incorporate the chips in machines sold to the biggest businesses, not just those sold to consumers.

AMD's Athlon has been "rock solid" in helping create 3-D animation for advertising projects at Vizix Digital Studio in Austin, Texas, said Vizix owner Cal Rodgers.

Since July, Rodgers has run 600-MHz Athlons in three single-processor PCs in a network alongside several Pentium III 550-MHz dual-processor PCs.

The single-processor Athlon machines run 1.2 to 1.5 times faster than the dual-processor Pentium IIIs and are "very reliable," Rodgers said.

Rodgers runs up to 18 PCs in a network, sometimes 24 hours per day, to render 3-D animations that are 30 seconds in length. "Speed and reliability are definitely important to us, since it takes five to 10 minutes to generate a single frame," he said. "And five minutes adds up when you are talking 900 frames for a 30-second spot."

Putting It to the Test

At Home Depot Inc. in Atlanta, tests have shown the Athlon 600-MHz processor running applications such as spreadsheets performing as much as 20% faster than a 600-MHz Pentium III processor, said Bjorn Billing, chief systems engineer.

"Without any question, we would be more interested in AMD desktops if AMD could get the top-tier vendors to sell them to corporations," Billing said.

Currently, IBM and Compaq Computer Corp. use Athlon chips but only in desktops for consumers. AMD does sell Athlon for commercial uses but mostly in unbranded "white box" PCs to small and medium-size businesses, analysts said.

According to a spokeswoman at Dell Computer Corp., which doesn't use AMD chips, Athlon's "bleeding edge" reputation doesn't appeal to corporate users.

Watch Out, Unix

A desktop manager at an aerospace company, who asked not to be identified, said he saw excellent performance from 600-MHz Athlons as well as Intel 733 Pentium IIIs he has tested. Both AMD and Intel are pushing workstations to levels equal to or better than Unix-based desktops, the manager said.

All three users are encouraged that AMD has pushed so hard, if only to stimulate market competition with Intel. Analysts said they're impressed with Athlon's performance as well.

AMD's release of the Athlon 700-MHz chip probably pushed Intel to release its 733-MHz Pentium III several months earlier, and AMD's presence has probably forced processor prices down, said Nathan Brookwood, an analyst at Insight 64 in Saratoga, Calif.

However, an Intel official denied AMD has had such an impact, saying Intel has always had competition as well as an aggressive schedule for releasing faster chips.

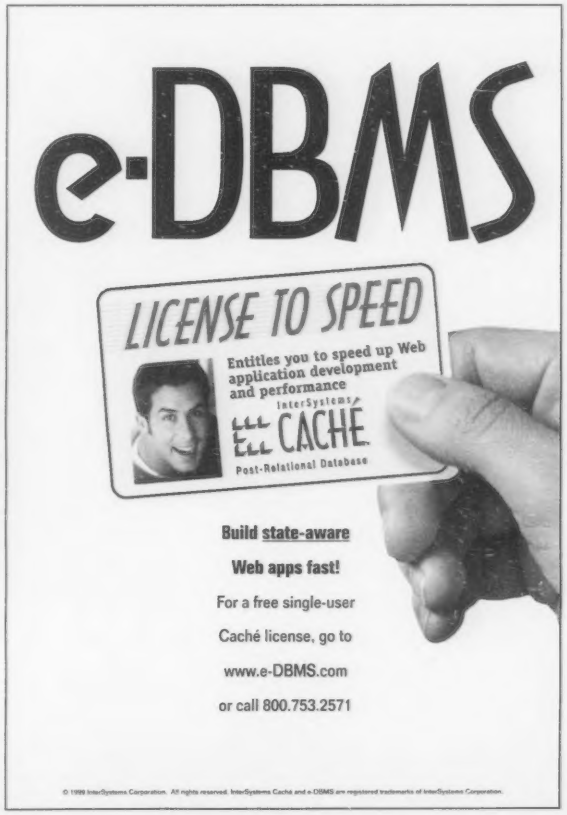
Brookwood and analyst Shawn Willett at Aberdeen Group Inc. in Boston stressed that for AMD to succeed, it must get top computer vendors to buy AMD processors for commercial desktops, not only those sold to consumers.

Getting computer makers to buy the Athlon for corporate use is a priority at AMD, a company spokesman said. ◗



Speed and reliability are definitely important to us.

CAL RODGERS, 3-D ANIMATOR AND OWNER, VIZIX DIGITAL STUDIO





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Start-up Working On Internet-to-Go

After three names and two standards, Phone.com marries Web and handhelds

BY CYNTHIA MORGAN

IT'S DIFFICULT TO change a corporation's name once, but Phone.com Inc. has done it twice in its five-year life span. Of course, if a fabulous domain name like *www.phone.com* came along and your company built the software that brought mobile phones, computing and the Internet together, you might risk re-reinventing yourself, too.

Phone.com, formerly Libris Inc. and Unwired Planet Inc., builds software that will help information technology managers grab data and ship it to customers' mobile devices.

The devices, anything from full-fledged laptops with slow wireless connections to the hot new mobile phones, can help corporations stay in almost constant touch with their customers, something good salespeople have been dreaming about for decades.

The lines between mobile phones and mobile computers are blurring. The European Global System for Mobile Communications, for example, includes a fast-growing phenomenon called Short Message Service that has taken the place of e-mail for quick-and-dirty messaging.

Personal digital assistants and mobile computers with wireless connections are all the rage. And the Internet has become the repository for so much information that being able to access it anytime or anyplace is becoming critical.

The problem is, of course, that no one can carry a laptop and phone line with them wherever they go. And the graphical nature of the Web makes it very difficult to display a Web page on a mobile phone's tiny screen.



WEB VIEWING, PHONE.COM-STYLE: Phone.com's UP products were designed to pull relevant bits of information from standard Web sites and deliver them to low-bandwidth, limited-memory devices such as mobile phones. Developers add WAP-compatible code to the site, which can be accessed by a WAP browser

Swiss Army Knife

Phone.com figured out a way to do just that, however, using a new mobile phone from AT&T Corp. Dubbed the PocketPhone, it was the Swiss Army Knife of mobile phones. It offered paging, voice mail, Caller ID and more, similar to Sprint Corp.'s new Digital PCS service but with a powerful twist: Internet access.

Using Handheld Devices Markup Language (HDML), a variant on the Internet programming language HTML, developers could pull information from any Web site and send it to the phone's LCD screen. It could help you track stocks, locate lost packages, discover when your favorite movie is playing or predict the weather, based on popular Internet sites.

Unfortunately, the one thing the PocketPhone couldn't do was handle any protocol other than old-fashioned Cellular Digital Packet Data (CDPD). When the PocketPhone was on the drawing board, digital mobile networks were barely a gleam in carriers' eyes. CDPD, which overlays IP data transmissions on standard analog cell phone signals, seemed a much safer bet despite its slow (19.2K bit/sec.) transmission speed.

Bad choice. Today's digital phones are capable of faster transmission speeds without the security problems and other limitations of analog cellular phones. Adios, HDML and CDPD.

Changing With the Times

Phone.com moved with the times, however, most recently diving into Wireless Application Protocol (WAP) and Wireless Markup Language, the two hot specifications that right now are leading the charge into Internet appliances of all stripes.

Phone.com sells to both sides of the Internet appliance equation with its "UP-" product family. The company offers a server gateway that mobile phone carriers can use to connect their customers to the Internet.

More important, it sells the tools that Web builders can use to add device-browsing capabilities to corporate sites. The company also gives away the software developer kit to entice developers into the Phone.com camp (a copy can be downloaded at *www.phone.com*).

The software has also been gaining adherents in the right places. Telecommunications giant Motorola Inc. in Schaumburg, Ill., for example, has agreed to support Phone.com's WAP efforts with its own wireless text-entry system.

Murray Hill, N.J.-based Lucent Technologies Inc.'s Wireless Data Gateway uses Phone.com's WAP as well. That's a strong indication that this start-up is well worth watching. ◗

Phone.com

Location: 800 Chesapeake Drive Redwood City, Calif. 94063

Telephone: (650) 562-0200

Web: www.phone.com

Niche: The technology client and server software that enables devices to access the Internet.

Growth potential: Analysts estimate that by 2002, nearly 60 million devices will be connected to the Internet.

Why it's worth watching: 2000 is shaping up to be the year of the Internet appliance. If you're not already planning to add device access to your Web site (where it makes sense), you may wind up behind your competitors.

Company officers:
- Alain Rossmann, chairman and CEO (formerly the CEO of personal digital assistant developer EO Corp.)
- Chuck Parrish, executive vice president (formerly the marketing vice president at GTE Corp.'s mobile group)

Milestones:
- 1994: Founded as Libris Inc.
- 1996: Is renamed Unwired Planet; launches its first browser-connected mobile phone software, AT&T's PocketPhone, running HDML
- April 1999: Renamed Phone.com
- June 1999: Initial public offering (Nasdaq: PHCM)
- October 1999: Completes acquisition of Irish WAP developer Apion

Burn money: At June initial public offering, stock closed at 40 1/8. Price last week: 144 1/4.

Partners: Lucent, Sprint, Bell Atlantic Corp., Motorola, British Telecommunications PLC and AT&T.

Major successes: It's grabbed all the right partners to keep software up to date and hold key positions on the WAP Forum.

Red flags for IT:
- Appliance access is yet another headache for corporate Web site managers.
- The competition is gaining on its appliance efforts, and there's renewed interest from big guys like Microsoft Corp.

COMPUTERWORLD emerging companies

[the buzz
STATE OF THE MARKET]

Flexible Phones and Battling Browsers

Phone.com's offerings compete in two arenas: client browsers, the software that sits on the user's mobile phone or Internet appliance and interacts with the Web, and server gateway software, which is generally sold to carriers, the providers of mobile phone networks.

But the client side is probably of more interest to information technology managers because it's intimately tied to Web site efforts. There, competitor Spyglass Inc. (*www.spyglass.com*) is deeply experienced in browser technology. A second rival, privately held AvantGo Inc. (*www.avantgo.com*) in San Mateo, Calif., spans the current device operating systems and seems to be setting itself up as an infoservice provider for personal digital assistants (PDA), something that could give it an advantage over Phone.com.

Spyglass' 1994 Spyglass Mosaic was one of the first commercial Web browsers and the basis for Internet Explorer. Pushed out of the browser market by the Microsoft Corp. vs. Netscape Communications Corp. dogfight, Spyglass quietly turned to building Web device software. It released its first full-fledged device browser in 1997.

The Naperville, Ill.-based company has made some clever strategic acquisitions, such as Stonehand; a Web content-filtering expert in Los Altos, Calif., called SurfWatch Software Inc.; and Windows CE companies AllPen Software Inc. in Los Gatos, Calif., and Navitel in Menlo Park, Calif.

But Spyglass' close alliance with Windows CE could hurt it in the PalmPilot-centric PDA market; Phone.com has a more platform-agnostic image. And Spyglass may have spread itself too thin by trying to sell to every possible device market, from set-top boxes to kitchen appliances; the company recently sold off its SurfWatch holdings and promised to focus more closely on the lucrative mobile device market in the future.

AvantGo, on the other hand, spreads itself ever thinner. It offers everything from Palm and Windows CE software to a service provider-like roster of information channels, already linked to its device browser. Those are big advantages that will serve the company well.

Big disadvantage: To date, the company is PDA-centric, and its WAP policies aren't as clear-cut as its rivals'. That could give Phone.com the edge.

– *Cynthia Morgan*

Making Systems Sound Good

BY CHRISTOPHER LINDQUIST

BUSINESS PCS used to be strong, silent types; only game players needed lots of noise from their systems. But now sound has become a big part of corporate life, with online radio stations like those at *www.broadcast.com* that can keep you up-to-date on the markets and your competition, audio e-mail attachments to enhance written communiqués and air-fare-saving videoconferencing, which isn't much use without spoken dialogue (unless you do business in sign language.)

Nearly every PC and laptop computer now comes with high-quality sound circuitry either integrated onto the system's motherboard or as part of an add-in soundboard. These sound circuits can also play back recorded audio from CDs in a CD-ROM drive, MP3 music files downloaded from Web sites and just about any other commonly created form of digital audio. Wave-table audio — which uses digitally recorded samples of real musical instruments to create high-quality electronic music — is also a nearly universal feature.

Many of today's sound cards offer extras that are of little use to most businesspeople, including 3-D positional sound (which tricks your ears into believing they can pinpoint where a sound is coming from), audio acceleration (which reduces the load on your CPU when playing sonically intensive games) and multivoice synthesis (which allows for more depth and richness in electronic music). About the only advanced business feature may be a high-end card's support for surround-sound. Hook a properly configured card into your surround-sound system and you can add serious sonic emphasis to your next presentation.

Traveling Sound

Of course, sometimes you don't have a high-end sound system to use when you're on the road. But some portable systems are beginning to catch up to desktops in terms of sound power. Sound chips in the latest portables offer high-quality sonic reproduction that is suitable for nearly any task. The big question mark remains to be the built-in speakers.

Many portable computers still contain speakers capable of reproducing only thin noise, which is barely loud enough for one person to hear, to say nothing of a small group. But recent multimedia models from the likes of Compaq Computer Corp., Toshiba America Information Systems Inc. in Irvine, Calif., and others offer sound with enough volume to be heard clearly across a room.

If your laptop doesn't have sufficient volume or sound quality, you can choose from a number of portable speaker systems that do. (See reviews of two models below.)

Once tinny and underpowered, the latest speaker systems have many useful features such as subwoofers that add guts to everything you hear, convenient volume controls, plenty of power and compact designs that won't chew up your desk space. They may even fit into your carry-on bag for those on-the-road presentations.

Speakers come in all price ranges, sizes and designs, from basic cubes to ultraflat — but the coolest-looking, most expensive set may not serve your needs any better than an inexpensive pair.

To determine what you need, consider: Will you use the speakers for just yourself or for group presentations? Do you need easy access to a headphone jack or volume control? Will the model you like fit on your desk? If not, can it be attached to your monitor to save space? If the system has a subwoofer, is it electromagnetically shielded so that you can place it near your monitor? If you intend to use the speakers with your laptop, do they come with a carrying case?

And don't just look — listen. Good speakers make everything you hear more enjoyable.

To help you make the most of your business audio, *Computerworld* has selected a few products that were designed to be music to be your ears, including ultraportable speakers, sonically outstanding headphones and a sound card that won't have you digging around behind your PC anymore. ◗

Lindquist is a reviewer in Moss Beach, Calif.



Sound Blaster Live Platinum

Sound Blaster Live Platinum

Creative Technology Ltd.
www.sblive.com
Price: $199

Pros: Innovative front-access panel fits in drive bay and provides easy access to speaker, microphone, headphone and digital surround-sound ports plus volume controls.

Cons: At $199, it's pricey for a sound card.

Best use: Great for desktops that see a lot of presentation use. No more crawling behind the box to hook up your speakers.

Model Twelve Transportable Sound System

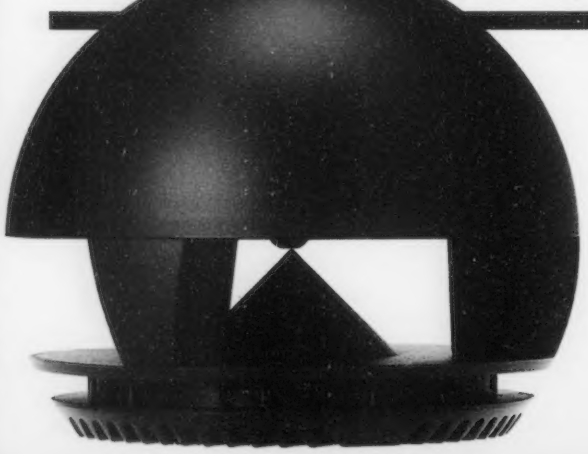
Cambridge SoundWorks
www.cambridgesoundworks.com
Price: $699



Pros: Loads of volume for even large groups. Fantastic sound. Case doubles as subwoofer. Makes a nice traveling stereo system when you're back at the hotel.

Cons: Fairly large and heavy (22 lb.) and pricey.

Best use: Traveling presenters who rely on audio and can afford the extra heft will love it.



Presentation Audio System

Mediaphile AV Technologies Inc.
www.mediaphile.com
Price: $99.95

Pros: Lightweight (under 2 lb. without subwoofer), small. Omnidirectional design is great for use on a conference-room table. Relatively inexpensive.

Cons: Adding the optional subwoofer ($200) increases bass response – as well as weight, size and cost.

Best use: A great sound system for small group presentations.

SR-60 Headphones

Grado Labs
www.gradolabs.com
Price: $69

Pros: Lightweight, inexpensive, good for both music and voice. Open design lets you hear external sounds.

Cons: Doesn't cut out all noise in loud environments.

Best use: In today's world, even executives don't always have offices. These will keep your next-door neighbors from getting annoyed.



Proxy Servers

BY CARLA CATALANO

A PROXY SERVER is like a bodyguard: It protects client computers from the fascinating but sometimes chaotic world of the Internet. A proxy server typically sits inside a firewall, between the Web browser and the real server, intercepting Internet requests from clients so they can't communicate directly with the Internet. This ensures that users don't access undesirable information such as pornographic Web sites or other sites that an organization designates as off-limits.

With a proxy server, companies can control Internet access by excluding certain Web addresses from being accessed by client workstations, says Michael Goulde, executive vice president at Patricia Seybold Group in Boston. For example, "corporations may not want employees trading stocks during work, in which case the network administrator can use a proxy server to block access to financial sites during certain hours," says Goulde.

"All client requests for Web content go directly to the proxy server," says John Morency, executive vice president at Sage Research Inc. in Natick, Mass. If the IP address exists on the proxy, then the page is accessed; otherwise, the request gets forwarded to the real server and then to the Internet, he explains. If the Web site resides locally (on the proxy server), then the user can actually load the site without accessing the Internet. If the site isn't on the proxy and isn't marked as undesirable, then the request goes out to the Internet. "A proxy server can be configured to establish legitimate requests that get forwarded to the Internet and illegitimate requests that get kicked back to the client without being serviced," says Morency.

Proxy servers enable companies to cache Web pages locally, which saves money because the pages are stored internally, says Joel Yaffe, an analyst at Giga Information Group Inc. in Cambridge, Mass. Not using a proxy server is "like repeatedly paying 35 cents to dial 411 for a telephone number instead of writing it down on a piece of paper," Yaffe explains. By caching frequently requested Web pages, companies don't need to pay again and again for the same page, he says (see "Caching In," page 68).

Caching Web pages also "speeds Web page retrieval because the pages can be accessed quickly from the hard disk instead of redeploying the Internet," says Goulde.

The most common users of proxy servers are Internet service providers like America Online Inc. and large corporations that not only want fast downloads but also want to share a pool of IP addresses among their users, Yaffe says. "There are limited amounts of IP addresses available right now, and proxy servers enable corporations to share IP addresses within a group of clients," he explains.

Moreover, assigning Internet addresses to all users is time-consuming, says Goulde.

A proxy server protects the internal network from being identified by the public. It does this by giving the network two identities: one for internal use and one for external use. This "creates an alias for the outside world so it's difficult for users to be monitored and for hackers to directly target individual machines," Morency says. In this way, the network remains relatively anonymous so marketers can't track the Web sites a user visits, he adds.

Proxy servers make better use of Internet bandwidth "so if you've got limited bandwidth and extremely high Internet traffic, you'd benefit by using a proxy server," says Goulde.

Consider an office with two network connections: a 56K bit/sec. connection to the Internet and a local Ethernet network to which 50 PCs are connected, Morency says. Without a proxy server, each Internet request and response goes over the 56K line, which can cause a traffic jam if several users access the Internet simultaneously. A proxy server enables users to access the Internet locally via the Ethernet connection so multiple requests for the same page don't tie up the 56K line.

The Downside

However, "proxy servers aren't very helpful when you have content that doesn't lend itself to be cached, like [Common Gateway Interface] scripts that contain on-the-fly responses," Morency says. For example, if you go to cnn.com and listen to the news, you're receiving a continuous audio and video stream. A proxy server makes the audio and video stream less efficient; the movements are jerkier and the sound and lip movements are skewed because it can only store repeatable information — not unique content, he adds.

Another drawback is a slight performance penalty because the proxy server checks each request before it responds, says Goulde.

But proxy servers hold value because a lot of Web access is repeatable information, according to Morency. ◗

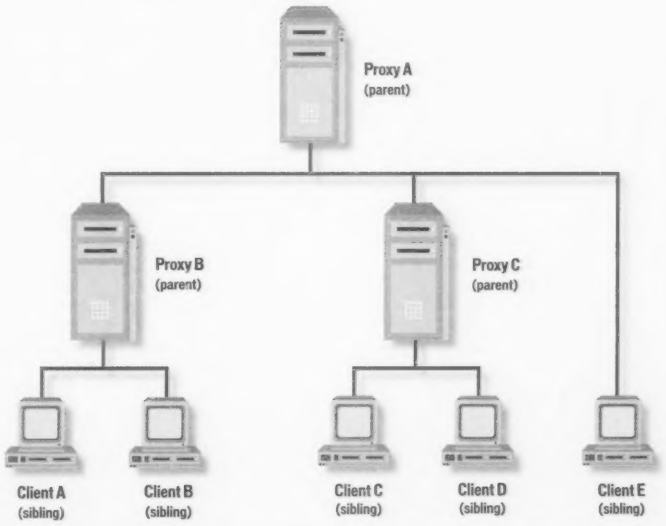
Catalano is a freelance writer in Holliston, Mass.

DEFINITION

A proxy server is an Internet server that controls client computers' access to the Internet. Using a proxy server, a company can stop employees from accessing undesirable Web addresses, improve performance by storing Web pages locally and hide the internal network's identity so that it's difficult for external users to monitor.

Client Hierarchy

Here you can see the different degrees of Internet access of various clients. Clients A, B, C and D have multiple levels of proxy hierarchy, but Client E has only one.



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CACHING IN

Network Web caching can accelerate Web access without breaking the bank

By Emily Kay

OPTING FOR Web caching software saved the Kentucky Department of Education $7.8 million, while speeding students' access to the Internet and blocking pornographic Web sites.

"It was a huge success beyond my expectations, with incredible response rates," says David Couch, commissioner of education technology for Kentucky's state government in Frankfort.

After examining other options, the state decided to spend just $200,000 to perform network caching and filtering using Microsoft Corp.'s Proxy Server, which stores Web content locally. One alternative was to spend about $8 million for a dedicated caching appliance.

On the Web, speed rules, as anyone knows if they've ever twiddled their thumbs waiting for a page to appear. Clearing bottlenecks and optimizing bandwidth usage to retain Internet customers and satisfy corporate users with the information they want is the name of the game. Network caching technology is proving to be the ticket onto the playing field.

Internet and internal intranet volume continues to skyrocket. International Data Corp. (IDC) in Framingham, Mass., estimates that the number of Web users will triple from 58.3 million in 1997 to more than 175 million in 2001. In addition, the number of Web pages — growing by more than 1 million per day — will reach 1.5 billion by next year, according to IDC.

As the quantity of Web users increases, their impatience for arriving quickly at their online destinations grows. At the same time, corporate network administrators are coping with the continuing degradation of network bandwidth, reliability and performance from increased Internet usage within their own organizations.

Keeping Pages Local

A network Web cache stores content and objects from Web pages locally rather than on remote Web servers. "By placing a cache of Web content on the network between the user and the originating Web sites, the distance that commonly accessed content has to travel over the Internet is reduced, and users experience quicker response and faster performance," says Michael Goulde, an analyst at Patricia Seybold Group in Boston.

Caching also improves performance for multiple users of frequently requested data. The first time a user clicks on a Web page, for example, the contents of that page are stored on the user's local network. The next user in the same organization can grab that page on the local network server, making for faster access and cutting down on traffic through wide-area network connections.

Appliances or Proxy Servers?

Caching products fall into two primary categories: caching appliances and software-based proxy servers. Caching appliances are dedicated hardware devices that are generally easier to manage and offer better performance. Proxy servers tend to be less expensive, and the hardware on which they run can be used for tasks other than caching (see Technology QuickStudy, page 67).

Vendors such as Microsoft, Novell Inc. and Netscape Communications Corp. sell software-based proxy servers running on general-purpose hardware platforms. Dedicated hardware appliances come from suppliers that include Cisco Systems Inc., CacheFlow Inc., Infolibria Inc. and Inktomi Corp. Network Appliance Inc. sells both types.

Content distribution and other more sophisticated offerings are available from vendors such as Akamai Technologies Inc., iBeam Broadcasting Corp. and Sandpiper Networks Inc. (see "Cache Crop," page 69).

In Kentucky, caching lets students and teachers access stored data in as little as 5 seconds, compared with the 5 minutes it would take to download the same data if each user had to go out to the Internet. "If information is cached at the school level, there's a high probability of it being there when it's needed," says Couch. "Information to the classroom is anywhere from 10 to 1,000 times faster than if there were no proxy in place."

Network software vendor Novell in Provo, Utah, sees similar benefits. "If you're in Novell Sydney [in Australia], sometimes you have to go all the way to Provo before you get to the Internet," says Smita Deshpande, marketing director for Novell's Internet solutions. "If you could cache a lot of that stuff right there at the Sydney site, you'd have considerable cost savings."

"Caching makes sense because storage is cheaper than transmission and because access performance from local copies is often better than perfor-

mance from the [original] server," says Peter Christy, an analyst at Internet Research Group, a caching research and consulting firm in Los Altos, Calif.

While caching is quickly becoming a "must-have technology for many users," it's mainly used by Internet service providers and is only beginning to catch on in corporate America, says Christy.

Internet service providers "increasingly see caching as the best way to maintain service levels and costs. And enterprises are getting their first taste of caching performance benefits on their networks," says Christy.

The network caching market was born in February 1998 with the arrival of products from vendors such as CacheFlow, InfoLibria, Inktomi, Network Appliance and Novell, he says.

Cisco's new, more-powerful Cache Engine 500 series targets the enterprise, which should help legitimize and expand the market as a whole and corporate network caching in particular, Christy notes.

Christy pegs U.S. enterprise caching revenue at $110 million this year, growing to $1.4 billion by 2003, with corporate buyers composing about two-thirds of all caching business by then.

Significant Savings

Kentucky's department of education has already realized significant savings. Microsoft Proxy Server on Windows NT servers in 230 pilot sites has saved the state $6,000 per year per school by avoiding the need to use leased lines, says Couch, who also evaluated proxy servers from Netscape and Novell.

At less than $1 per student, Microsoft Proxy Server turned out to be far less expensive than traditional filtering software. Couch says he would have spent $14 million for Web "censorware" products and $5,000 per school for firewall technology. "Microsoft has all those things built into one," he says. He eventually plans to deploy Proxy Server on 1,600 machines in school and district offices.

UtahLink in Salt Lake City went a different route for similar caching and filtering functionality for Utah's educational institutions. A state-run Internet service provider for Utah's colleges, universities, elementary schools, high schools and state agencies, UtahLink recently replaced Network Appliance software running on Sun Microsystems Inc. Solaris machines with Novell's Internet Caching System (ICS) server software operating on 16 Compaq Computer Corp. 2000R, 1500R and 1200R computers.

ICS on Intel machines is far cheaper to maintain than Solaris boxes, and it's a snap to administer and configure, says senior network UtahLink engineer Donald Porter, who used to have to drive across the state to fix problems in remote school districts.

> Caching can give a 60-times increase in performance over no caching and running straight off a database.
>
> ANDREW KASS, LIVING.COM

"Walking someone through a Solaris repair over the phone is nontrivial," says Porter. "With ICS, you put in a CD-ROM, reboot the machine, and it rebuilds itself."

Despite the myriad products available, commercial caching solutions don't offer enough sophistication for all information technology managers.

Living.com Inc. in Austin, Texas, developed its own advanced caching capabilities to supplement those available in Art Technology Group Inc.'s Dynamo application server. Registered visitors to the home products and services Web site get personalized Web pages, articles, products and services tailored for them, which Dynamo's caching couldn't provide, says Andrew Kass, living.com's technology director.

Personal Caching

"Instead of reading an HTML page off a disk, every page is dynamically suited for each person," says Kass. "Caching can give a 60-times increase in performance over no caching and running straight off a database."

Given the growing volume of Internet usage and the Internet's repetitive usage patterns, caching can offer tremendous benefits to Web surfers. In addition, experts say that because most Internet traffic is generated by a few extremely popular sites, caching the contents of these sites in locations around the world that are closer to users significantly boosts access times.

IT managers concur. "Caching is probably one of the most important things you can do to improve performance," says Kass. ◗

Kay writes about technology as a principal at Choice Communications, an editorial consulting firm in Chelmsford, Mass.



MARC BERLOW

"INFORMATION TO THE CLASSROOM is anywhere from 10 to 1,000 times faster" with caching, says David Couch, Kentucky's commissioner of education technology

Cache Crop

Caching alone may not improve Internet performance enough for some enterprises, which is why Internet content distribution services from vendors such as Akamai Technologies, Sandpiper Networks, Exodus Communications Inc. and Digital Island Inc. are popping up alongside the emerging caching products market.

The content distribution vendors use the same basic caching technology as corporate users, but offer caching as a service so customers don't have to build and maintain their own cache networks. Some of these vendors also build intelligence in to their cache networks so users can get the most critical information first. Managed caching services benefit enterprises that don't have the resources to build their own base of caches, says Tim Wilson, Digital Island's marketing vice president in San Francisco. "We provide an installed base of caches already out there and available," he says.

Crom Carmichael, an Exodus ReadyCache content distribution service customer, agrees. "We decided to host at Exodus and take advantage of the ReadyCache service rather than spend enormous amounts of money on professional resources and equipment to handle occasional spikes in traffic," says Carmichael, chief operating officer at Ishophere.com, an online shopping network in Nashville.

Content caching services have piqued the interest of other IT managers. The services make sense for static content such as images, says Andrew Kass at living.com. Because images consume most Internet bandwidth, it makes sense for a managed caching service to store them on its far-flung servers, says Kass, who expects that many Web businesses will run their own application servers and outsource static files to caching services. Kass is evaluating several vendors' offerings but will continue to cache HTML search pages on his own servers "because every user gets a personalized page," he says.

ReadyCache combines Foster City, Calif.-based Inktomi's Traffic Server with monitoring and log analysis services, so users can see who's accessing data and how often. It was designed to move frequently accessed data closer to end users and improve response times for customers' sites, says Jim McInerney, executive vice president of engineering at Exodus in Santa Clara, Calif.

Digital Island and Sandpiper recently merged and plan a January release of a managed caching service. Based on technology from Digital Island and Sandpiper as well as RealNetworks Inc.'s RealSystem G2 software, the service will provide streaming video and audio caching to IT organizations in eight countries, according to Wilson. – *Emily Kay*

COMPAQ TAKES A

COMPAQ COMPUTER CORP. may be one of the leading sellers of server hardware, but *Computerworld* readers ranked Compaq hardware lowest of the major vendors in key areas such as scalability, quality and overall service and support.

And though Sun Microsystems Inc.'s Solaris is a comparatively small player in the market for Unix-based server operating systems, users who responded to the survey said it outperforms other systems, including Microsoft's Windows NT. Out of 21 categories such as reliability and scalability, Solaris users reported they are "completely satisfied" or "very satisfied" in 13 categories. Windows NT scored lowest in five categories.

Compaq's low scores were among the most dramatic findings of *Computerworld*'s online survey of 208 information technology managers. They were asked how satisfied they are with their server hardware and operating systems.

Compaq trailed its competitors in many server categories. In scalability, 95.8% of Sun users said they were "completely satisfied" or "very satisfied," compared with only 60.5% of Compaq users. In quality, Sun ranked highest, with 95.8% "completely satisfied" or "very satisfied"; Compaq scored lowest, with 71.1%. IBM scored highest in overall service and support with 80% "completely satisfied" or "mostly satisfied," compared with only 50% for Compaq.

When it came to hardware prices, 70.8% of users were "completely satisfied" or "very satisfied" with Dell Computer Corp., while IBM lagged at 40%.

Users drawn from *Computerworld*'s circulation list were asked to rate their satisfaction in each category by selecting "completely satisified," "very satisfied," "somewhat satisfied," "not very satisfied" or "not at all satisfied."

We combined the ratings for each vendor's "completely" and "very satisfied" votes and then compared those ratings in categories such as ease of upgrades, quality and reliability.

Problem Areas

Looking at server and server operating systems together, we found categories in which no vendor scored well. They include: ease of configuration, ease of upgrades, vendor support, channel support, vendor responsiveness, price, value for price, cost of in-house support and cost of ownership.

In the server hardware portion of the survey, Compaq ranked lowest in the combined satisfaction scores, even though the most respondents in the survey were Compaq users. Out of 21 categories, Compaq scored lowest in 15.

Compaq officials counter that users vote more effectively with their dollars. "We believe that market-share leadership is the clearest satisfaction survey result," says Arch Currid, a spokesman at Compaq.

As for other server vendors, Sun took seven of the highest scores and two of the lowest; Dell took seven highest scores and one lowest score; IBM had four highest scores and two lowest ones; and Hewlett-Packard Co. fell in the middle, with two highest scores and none of the lowest.

Sun's Unix variant, Solaris, drew top scores from *Computerworld* readers. Out of 21 categories, Solaris users were "completely satisfied" or "very satisfied" in 13 categories. HP-UX scored lowest in 17 categories.

Windows NT scored lowest in five categories, while Novell Inc.'s NetWare was highest in six categories and IBM's AIX scored highest in two.

We've also broken out results for servers and operating systems, along with summaries of the vendors:

SERVER SATISFACTION POLL:

Computerworld Customer Satisfaction Survey puts Dell and Sun in the lead for hardware, while Sun Solaris outranks the operating systems pack By Tim Ouellette

HIT

Hardware

Overall satisfaction among hardware users was very high — most of the users were satisfied with their machines and would choose their vendors again.

Compaq trailed the other major vendors in most categories. Dell and Sun users were the most satisfied, while IBM and HP fared consistently well.

Compaq Most respondents said they used Compaq servers, but the company scored lowest in 16 of the 21 categories.

"Compaq certainly has had its share of trouble recently with restructures," says Joseph Violanti, network administrator at the Sayre Area School District in Bradford County, Pa. He says he has also noted a decline in customer service since those changes began.

"This is typical when a company goes through a reorganization," says Jonathan Eunice, an analyst at Illuminata Inc. in Nashua, N.H. "With the inward focus, it can tend to reduce customer satisfaction."

One user noted that Compaq servers can sometimes be harder to configure because they use drivers and components that can be "more proprietary than others."

Users were also "least satisfied" with Compaq's technical direction.

Part of users' uneasiness with Compaq involves the company's efforts to integrate technologies purchased from Digital Equipment Corp. and Tandem Computers Inc. in Cupertino, Calif.

Jan Arnett, manager of operating systems and systems administration at Fluor Daniel Inc. in Cincinnati, says that while he's happy with Compaq machines, he isn't as happy with its decision to drop Windows NT development on Alpha.

"They have bent over backward trying to resolve this issue for users, but it was just poor planning that caused the decision," Arnett says.

But being an industry leader can generate some user trust and interest. Users said they were satisfied with Compaq overall.

Chris Bracy, MIS manager at AccuSort Systems Inc. in Telford, Pa., replaced the company's NetFrame and generic-brand servers with Compaq 3000s. He says management wanted to go with a name brand after a system crash with the old mix of servers.

Dell received strong marks compared with its chief competitor, Compaq.

The Austin, Texas-based vendor won highest marks for its support, responsiveness to problems, ease of configuration ease and pricing.

In a move typical of Dell customers, one user, who asked to remain anonymous, had switched to Dell from a mix of smaller vendors' systems.

"There are certainly other vendors that may have an equivalent product. However, the Dells have been rock solid, and we never have to pay attention to their equipment after we set it up," says the user, an IT manager at a California manufacturer.

Hewlett-Packard fell in the middle among its competitors in terms of hardware offerings. But its scores were consistently strong, and, while HP didn't engender the same loyalty among its users as Sun or Dell, users said they're satisfied with HP.

"I have always been impressed by how their stuff is engineered," says Barry Brunetto, an IT manager at Blount Inc. in Oregon, where he runs Windows NT on HP servers. "And when they make a mistake [in terms of design], they tend to correct it immediately."

IBM received the highest marks for system reliability and support.

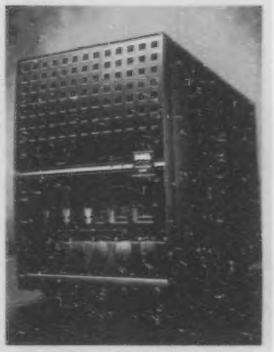
Still, users were less enthusiastic about IBM's pricing policies. The company also scored lower than other system vendors in the reputation and flexibility categories.

One area in which IBM excelled was service and support. "IBM has one of the strongest internal services organizations that exists," says Brad Day, a director at Giga Information Group Inc. in Boston.

Sun users gave the company's systems strong marks for performance, scalability and quality. Users were also very happy with Sun's reputation and technical direction, rating it 99% in overall satisfaction.

"Sun is a very steady company. That is why people are happy with them," says Richard Alexander, an IT manager in research and development at Gener-

Field Report, page 73



SERVERS

Scores are combined totals of "completely satisfied" and "very satisfied" user ratings.

RELIABILITY

Compaq users show less faith in this area, while IBM leads the pack:

IBM	**93.3**
Dell	87.5
Sun Microsystems	83.3
Hewlett-Packard	80.8
Compaq	77.6

SCALABILITY

Sun far surpasses other vendors here, with Compaq again placing last:

Sun Microsystems	**95.8**
IBM	76.7
Hewlett-Packard	73.1
Dell	70.8
Compaq	60.5

SERVICE & SUPPORT

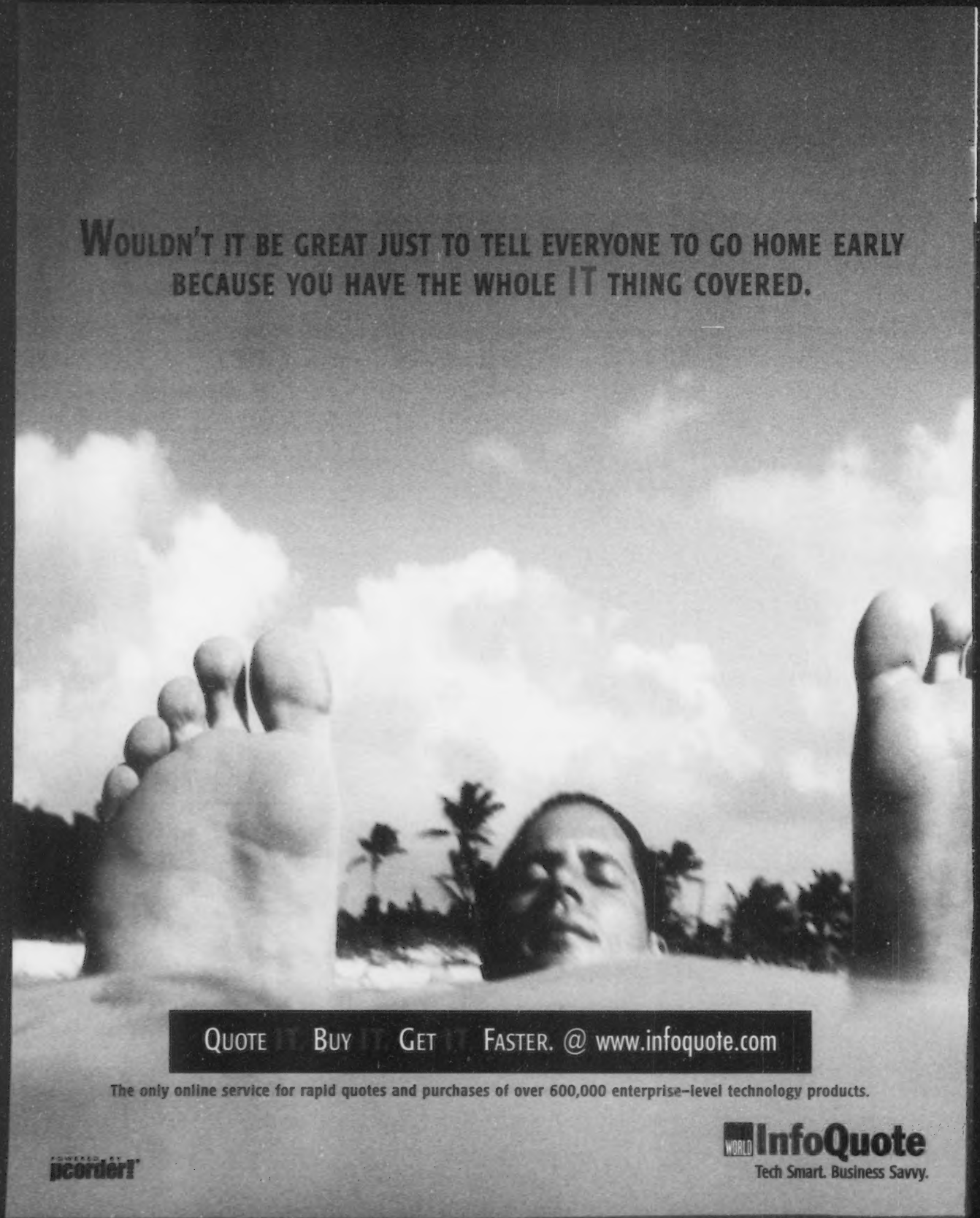
The ratings aren't stellar, but IBM comes out on top here, with Compaq lagging far behind:

IBM	**80.0**
Dell	70.8
Hewlett-Packard	65.4
Sun Microsystems	62.5
Compaq	50.0

EASE OF UPGRADING

Tight race, but Dell takes the lead, with Sun falling last:

Dell	**75.0**
Hewlett-Packard	73.1
IBM	63.3
Compaq	55.3
Sun	54.2


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Continued from, page 71

al Electric Co. in Fairfield, Conn. He says GE uses Sun machines for a mix of business and technical uses.

In fact, Gartner Group Inc. in Stamford, Conn., cites Sun's pro-Unix stance and UltraSPARC II processor architecture as important factors in Sun's success. But there are still areas that need work, including pricing, in-house support and configuration.

One note for the future: Users such as Alexander say Windows NT clusters are an option for high-end technical and scientific applications, where Sun has traditionally held sway.

Still, this is a group of satisfied users. More than 95% said they would buy Sun hardware again.

Operating Systems

Long-serving Unix operating systems scored well.

Users seem more satisfied overall with Unix compared with Windows NT and NetWare, though NetWare showed it still has a loyal following.

Solaris received the highest marks for satisfaction among vendors, with NetWare and IBM's AIX coming in second. Windows NT users made up the lion's share of respondents to the survey, but NT consistently placed lowest. Less than half of HP-UX users said they would buy it again, although we must point out that the number of HP-UX users in this survey was small.

Microsoft Windows NT was the lowest-rated server operating system for performance, reliability, value, vendor responsiveness and cost of ownership.

"I feel that the mixed responses are primarily due to their vast number of [resellers] doing business in the marketplace," with a varying degree of satisfaction and quality of service among those different NT resellers, says Bob Felts, an information services manager at U.S. Para Plate Corp. in Sacramento, Calif.

Novell NetWare users are very loyal and give the operating system high overall marks, but they have issues with the ease of upgrades, pricing, cost of in-house support and vendor credibility.

Still, Novell didn't score lowest in any categories and topped all other vendors in configuration and upgrades, vendor and channel support and cost of ownership.

Novell says it focused on configuration issues with NetWare 5. "We had to make it easy for customers to configure their networks after upgrading from NetWare 3 and 4 to 5," says Blake Stowell, a spokesman at Novell.

Violanti credits Novell's ZenWorks management software with improving upgrades and cost of ownership. "It has cut dramatically the phone calls and aggravation from end users," he says.

But Novell still has its work cut out for itself in competing against Windows NT. "They have a good product but do not know how to market and manage it," Arnett says. "We happen to like NetWare and would have stayed with Novell" but instead went with Windows NT as part of a corporate move.

Hewlett-Packard's HP-UX scored the lowest overall in the survey; however, it's important to note that HP-UX users were the lowest number of respondents in the survey. HP took hits on its pricing, compatibility, ease of configuration, scalability, service and support, price, channel support and ease of upgrade. "HP-UX doesn't have the fervor of support that NetWare and Solaris have," says Eunice. "But HP-UX is a solid commercial version of Unix and tends to have solid performance."

Sun Solaris customers were happy with the quality and performance of Solaris — its satisfaction levels were highest in 13 of the 21 categories. Still, problems continue in vendor responsiveness and overall service and support.

"I think that [Sun's] reliability comes at a cost, in high equipment prices and high support prices," says GE's Alexander. For example, Sun's Standard Silver support can cost about $1,100 per desktop on a box that can be replaced for $2,500, he noted.

Some users see Sun's refusal to sell Windows NT as a strength.

"When Sun starts selling NT, Unix will be dead," says Alexander. He says he hopes Sun sticks to its Unix roots to keep customers like himself happy. He would also like Sun to begin reselling systems, like some other providers, based on the Linux open-source operating system.

Contrary to other vendors, Sun still has about one-third of its installations using Solaris for scientific and engineering applications. The high marks Solaris received for system performance and scalability could be tied to the fact that, unlike other vendors, about one-third of Solaris installations are for scientific and engineering applications, where such factors are crucial.

IBM's AIX took top marks in service, support and reliability. Users seemed happy overall but were less satisfied than other users in product pricing.

Users took the middle-of-the-road approach when looking at other technical aspects of the operating system.

"I think IBM is doing a reasonable job of keeping pace in most areas," says one IT manager, who wished to remain anonymous. "As far as AIX is concerned, the lag is significant and reflects IBM's historical lack of enthusiasm for software development."

But IBM says it's improving, especially in reliability. IBM has put a lot into testing new versions of AIX and is seeing improvements from release to release, says Miles Barel, program director of Unix brand marketing at IBM.

And in terms of pricing, Barel notes that there are changes in pricing methods going on among Unix vendors: Although IBM may charge extra for additional users (while competitors don't), IBM offers more system-management features as part of the base price. ◗

Ouellette is a freelance writer in Scarborough, Maine.

ONE SORE POINT: COST OF OWNERSHIP

Scores are combined totals of "completely satisfied" and "very satisfied" user ratings.

SERVERS AND OPERATING SYSTEMS

Customers gave less-than-stellar ratings for both servers and operating systems in all cost categories:

SERVERS	PRICE	VALUE	IN-HOUSE SUPPORT	COST OF OWNERSHIP
Compaq	46.1	59.2	52.6	61.8
Hewlett-Packard	69.2	**76.9**	53.9	65.4
Sun Microsystems	41.7	58.3	41.7	54.2
IBM	40	63.3	60	53.3
Dell	**70.8**	70.8	**66.7**	**70.8**

OPERATING SYSTEMS	PRICE	VALUE	IN-HOUSE SUPPORT	COST OF OWNERSHIP
Windows NT	42.7	40.6	36.5	37.5
Novell NetWare	62.5	66.7	**62.5**	**66.6**
IBM AIX	64.3	64.3	42.9	57.1
HP-UX	37.5	50	25	37.5
Sun Solaris	**72.7**	**72.7**	50	63.6

MOREONLINE

For the complete results of this study, visit our Web site.
www.computerworld.com/more

SERVER OPERATING SYSTEMS

Scores are combined totals of "completely satisfied" and "very satisfied" user ratings

RELIABILITY

Windows NT trails far behind the others; Sun Solaris places first by a wide margin:

Sun Solaris	**95.5**
IBM AIX	85.7
Novell NetWare	79.2
HP-UX	62.5
Windows NT	46.8

COMPATIBILITY

HP-UX, NT fall behind the pack:

Sun Solaris	**90.9**
IBM AIX	78.6
Novell NetWare	77.1
Windows NT	59.4
HP-UX	37.5

SCALABILITY

Sun Solaris again far outshines the others, with HP-UX woefully trailing behind:

Sun Solaris	**100**
IBM AIX	78.6
Novell NetWare	72.9
Windows NT	54.2
HP-UX	37.5

SYSTEM PERFORMANCE

Novell NetWare, IBM AIX and Sun take a strong lead here:

Sun Solaris	**100**
Novell NetWare	93.7
IBM AIX	92.9
HP-UX	62.5
Windows NT	60.4

METHODOLOGY

In September, *Computerworld* surveyed 207 IT professionals on their level of satisfaction with their primary server and server operating system. We invited information technology professionals responsible for selecting servers and server operating systems for their organizations to go to a private Web address and take our online survey. Each respondent was asked to comment on only his primary server and server operating system.

Respondents indicated their satisfaction with the vendor, either "completely satisfied," "very satisfied," "somewhat satisfied," "not vey satisfied" or "not at all satisfied" on a variety of topics.

Results shown are the combined percentage of respondents that indicated they were "completely satisfied" or "very satisfied."

Technology Happenings

- **IBM** acknowledges the **year 2000 problem** and announces plans to provide its customers with services, tools and support to make "timely year 2000 transitions."
- Main U.S. backbone traffic is routed through interconnected network providers. The **National Science Foundation**'s network reverts to a research network.
- **Netscape Communication Corp.**'s Nasdaq initial public offering is explosive.
- Registration of **domain names** is no longer free. A $50 annual fee is imposed.
- The Web browser war between **Netscape** and **Microsoft Corp.** begins.
- **The Walt Disney Co.** releases *Toy Story*, the first completely computer-animated film. It uses software from **Pixar Animation Studios**.



- Intel Corp. releases the **Pentium Pro** processor. It has 5.5 million transistors.
- **Prodigy Communications Corp.** becomes the first consumer online service to provide access to the Web. Other providers soon follow.
- **Clones** of **Apple Computer Inc.**'s Macintosh debut.
- In the movie ***Copycat***, an agoraphobic psychologist who specializes in studying serial killers relies on the Internet to talk to the outside world. The killer contacts her through the **Internet**.
- **Advanced Micro Devices Inc.** introduces the **K5** microprocessor chip.
- **Microsoft** and **DreamWorks SKG** announce a joint venture to produce interactive and multimedia technology.



Other Notables

- **Best Picture:** *Braveheart*
- **Seamus Heaney** wins the Nobel Prize in literature.
- **Sen. Bob Packwood**, R-Ore., resigns under pressure for sexual and official misconduct.

■ Flashback is produced with the assistance of The Computer Museum History Center in Mountain View, Calif.

Java and Windows 95

BY MARY BRANDEL

1995

BY 1995, the American public was just as susceptible to technology hype as techies were, thanks to pervasive PCs and the World Wide Web. It was in this environment that Microsoft Corp.'s Windows 95 operating system was released.

This same year, Sun Microsystems Inc.'s Java programming language — with its hip name and ability to bring Web pages to life — hit the scene.

Undeniably, Microsoft made the bigger splash. The drama began two years before the actual release, when Microsoft sent out 40,000 free beta copies of the operating system. Then, after a long delay, Windows 95 was released in August, accompanied by an over-the-top advertising campaign that reportedly cost $200 million.

It was hard to believe that the carnival atmosphere was centered around a piece of software. "The idea that an operating system could have permeated popular culture was astounding, because, let's face it, it was just an operating system," says Michael Gartenberg, a vice president at Gartner Group Inc. in Stamford, Conn.

It's little wonder that people lined up in front of retail stores at midnight to purchase this 32-bit, multitasking desktop operating system. This was, after all, the upgrade to a terrible precursor: the infamously crash-ridden Windows 3.1. Nearly two-thirds of the world's PCs ran Windows at the time, and the users of those PCs were keen on having a more stable platform.

The release was ultimately a success. "Win 95 represented Microsoft's attempt to get a graphical user interface in place and do it correctly," says Gartenberg. And, he says, the company did a reasonably good job, considering that it was bridging DOS and Windows with the new world of 32-bit computing.

Although less hyped, Java was more influential in terms of the Web. Ironically, though, Java wasn't created explicitly for the Internet at all. Its story begins in 1991, when a 13-member group at Sun was given plenty of money and lots of autonomy to go off and create a product for the next technology wave.





IN 1995, James Gosling and his Java team developed the platform-independent language as an alternative to C++

The group chose to develop a common way for consumer electronic devices, from VCRs to toasters, to communicate with one another and be controlled by a single device.

Because of the diversity of devices, the group needed a platform-independent programming language and chose C++. It soon became clear to team member James Gosling, however, that C++ couldn't meet other consumer requirements, such as a very high degree of reliability. And so he wrote a new programming language, which he called Oak but later renamed Java for trademark infringement reasons.

The group worked nonstop, emerging 18 months later with a handheld remote-control device with an animated touch screen called the *7. The demo was successful, and the group was given the go-ahead to form its own company within Sun, called FirstPerson Inc., and to target the then up-and-coming set-top box operating system market. That market never came to fruition, and by 1994, FirstPerson had been disbanded.

The future looked bleak until a few members of the original group hit upon a jackpot of an idea: Why not target the Internet? After all, as Gosling says on Sun's Java Web site, "all the stuff we had wanted to do, in generalities, fit perfectly with the way applications were written, delivered and used on the Internet. It was just an incredible accident."

The group soon produced a browser, initially dubbed WebRunner and later renamed HotJava, to show off Java's capabilities, namely the ability to download Java programs from a Web site and execute them on the browser. This turned previously static Web pages into ones that could display animated objects and execute content on the client via the browser.

Going Beyond Limits

"Java applets created a splash because they came at a moment when HTML was becoming widely used, and people started running into limitations with it," says Yefim Natis, a research director at Gartner Group. "It made Web pages come alive."

Java and HotJava were formally announced in May at SunWorld '95. Programmers went wild, bogging down Sun's servers with tens of thousands of downloads. And it was quickly accepted by bigwigs in the Web world, such as Netscape Communications Corp. and, later, Microsoft.

Java's intent has changed in the past four years. "The activation of Web pages on the client requires too rich of a client, and the trend is to do work on the server," Natis says. In response, Sun has augmented applets with servlets — Java programs that are like applets but execute on the server.

But Java has become an important computing platform on which droves of programmers write mission-critical applications that are easily ported among different platforms and easily maintained. ◗

Brandel is a frequent contributor to Computerworld. *Contact her at brandel@norfolkcounty.com.*

A nerve gas attack in a Tokyo subway kills eight and injures thousands. The Aum Shinrikyo ("Supreme Truth") cult is to blame.

Fighting escalates in Bosnia and Croatia.

The Million Man March draws hundreds of thousands of black men to Washington.

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A terrorist car bomb blows up the block-long Oklahoma City federal building. Timothy McVeigh, 27, is arrested as a suspect.

A Los Angeles jury finds O. J. Simpson not guilty of murder charges.

Start-ups and Buttoned-downs

Houston and Austin, Texas, are both desperate to lure IT professionals, expecting a flood of new projects and development work as Y2K winds down

By Jeffery D. Zbar

With mild climates and hot technology sectors, the Texas markets of Houston and Austin are doing everything they can to rustle up some skilled information technology workers.

But the two markets have fairly different auras, say those who work there. Austin is bustling with IT and dot-com start-ups — and the entrepreneurial spirit that comes with them. Houston, on the other hand, is home to long-established companies and presents a more conventional atmosphere.

HOUSTON: Big Business With a Start-up Feel

Houston, long home to 15 oil companies, regional banks and a buttoned-down business acumen, has 1,700 high-tech companies, mostly in aerospace, life science, IT and energy. Recently, it has seen more start-ups arrive, says Paul Frison, president and CEO of the Houston Technology Center, a nonprofit group created to promote high-tech growth in the market.

Where Austin has around 1 million residents, making its IT population more prominent, Frison says Houston's 3.5 million dwellers tend to overshadow its IT community.

"Houston is taking on more of a start-up feel with more entrepreneurial start-ups than in the past," says Frison, who hosts a monthly "digital mixer" to help IT workers find camaraderie. "For the past two years, Houston had the most start-ups of any city in the U.S."

Because of its plethora of Fortune 500 companies, including Shell Oil Co., Compaq Computer Corp., Service Corporation International and Administaff, Houston's hottest IT needs are related to traditional enterprise resource planning (ERP) applications, Frison says. Workers familiar with Unix, Oracle, SAP and Baan technologies will find good posts, as will AS/400 engineers and administrators. "Everybody is looking for Web-trained engineers who can build on ERPs that tie in with these Web-based applications," he says.

Internet and e-commerce positions also are hot, whether it's for electronic data interchange plan setup or Web site development, says Sal Rampelli, area sales manager at RHI Consulting Inc., a placement firm. Salaries range from $55,000 to $80,000 for candidates with three years' experience in C++ scripting, with a 30% premium for a Microsoft-certified systems developer.

"People associated with Internet or commerce for Internet exchange are being pursued by corporate America in the Houston market," Rampelli says.

As Y2K work winds down, local headhunters anticipate a flood of initiatives for hardware and desktop applications — all based on client/server applications, with legacy systems like Cobol and Fortran migrating out, Rampelli says. "Coming into the new millennium, we're going to see a big burst in desktop applications software and new hardware rollouts for corporations that have basically put those projects on hold," he says.

AUSTIN: The 'Silicon Hills' of Texas

Three hours up U.S. Highway 290 is Austin, a bustling capital town brimming with dot-com start-ups, established corporations and four universities that give Austin a distinctly "college town" feel, says Jason Griffin, a technical recruiter at National Instruments Corp., a test equipment manufacturer in Austin.

The IT hiring market in Austin is competitive and progressive, with billboards and even movie theater slides beckoning recruits, he says. Start-ups are offering bonuses that include stock — and some recruiters are taking stock as part of their fee, says Shea Baker, branch manager at ESG Consulting Inc. in Austin.

Austin is home to semiconductor and computer companies like Samsung, Motorola Inc., Advanced Micro Devices Inc. and Dell Computer Corp. National Instruments and other companies lately have been searching for workers skilled in Windows for front-end applications, desktop support and help desk work.

This is especially important in a market where Internet start-ups are as prevalent as traditional corporations and development companies, adds Monica Scantlen, senior technical recruiter at staffing firm Belcan Corp. in Austin. With Internet development "very hot right now," companies also are looking for professionals with experience in Active Server Pages, Oracle and the HTML Web programming language, she says.

Zbar is a freelance writer in Coral Springs, Fla.


Austin


Houston

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Languages
Cobol, C++

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Oracle, Microsoft, SQL Server

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What IT Pays . . .

Texas cities vs. the national average

JOB TITLE	HOUSTON/ AUSTIN	NATIONAL AVERAGE
CIO	$136,000	$140,000
Senior programmer/analyst	$58,000	$59,000
Programmer/analyst	$56,000	$49,000
Network administrator	$49,000	$53,000

Hiring trends to watch

SKILLS	AUSTIN	HOUSTON
	ERP, Unix, C++, Java and Visual Basic, plus hires versed in business and strategy	ERP applications, Unix, Oracle, SAP, Baan, AS/400 administrators, Web-trained engineers
SALARY	**AUSTIN**	**HOUSTON**
	3 yrs. in C++, $55,000-$70,000; midlevel developer/ 2 yrs. on Microsoft platform, $65,000-$75,000; similar Java experience, $65,000-$80,000	3 yrs. in C++ scripting, $55,000-$80,000, with a 30% premium for Microsoft-certified developers

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Programmer Analyst - Sought by Clinton, IA consulting company to work in various unanticipated locations throughout the U.S. Under direct supervision, design, develop, code, test and implement software applications. Analyze client requirements & design & develop software applications to meet client specifications and goals. System testing & installation. Develop BATCH and ONLINE programs. Use of IBM Mainframe environment. ES9000 MODEL 9021/520 with MVS/ESA Operating System. MVS, COBOL, CICS, VSAM. Reqs. Bachelor's in Computer Science, Electrical or Electronic Eng., Math, Economics, Statistics or its foreign equivalent in education and/or exp. Plus 2 years in the job offered or 2 years in a related occupation including Programmer or Systems Analyst. $50,000/year, 40/hrs/wk, 8 AM-5PM. Respond by resume to Iowa Workforce Center, 2740 S. 17th Street, Clinton, IA 52732-7040. Refer to Job Order No. IA 1100971

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Send two copies of resume to State of Wisconsin, Milwaukee Downtown Job Service office, 819 N. 6th Street, Milwaukee, WI 53202. Attention: Gerald Gulseth, Reference Number C101062. NO CALLS. AN EMPLOYER PAID AD.

Software Engineer sought by Houston, TX Co. providing S/ware Engg Services for Energy Industry. Must have MS in Comp Sci & 1yr exp in d/base dsgn. Respond by resume to: HR Dept, Nucleus Corporation of Texas, 10777 Westheimer, Ste 1250, Houston, TX 77042

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Sales Engineer sought by S/ware Dvlpmt Co. in Waltham, MA. Must have Bach in Comp Sci/Engg or related field or equiv & 2 yrs exp in Object-Oriented Technology incl 1yr exp in C++ or Java in either a Unix or Win platform. Respond to: HR Dept, IONA Technologies, Inc. 200 West St, Waltham, MA 02451.

Senior Software Engineer wanted by Financial & Consulting Co. in Orlando, FL. Must have MS or foreign equiv in any Engg discipline or Comp Sci/ Math and 2 yrs computer exp. Respond to: HR Dept, Atlantic Portfolio Analytics & Management Inc, 201 E. Pine St, Ste 600, Orlando, FL 32801. Attention: John P. Seall

Job # 7055532 - Software engineer who will develop software systems, applying computer science, engineering and mathematical analysis, using C and C++. Will analyze software requirements and perform testing and user training after development. Extensive travel and frequent relocation. Must have at least one year of experience using C and C++. Bachelor's degree in one of several limited fields: engineering, computer science, mathematics, or physics. $60,000 yr. 40 hrs/wk, 9:00 am-5:00 pm. Send resume to Mr. Tom Rusnack, Manager, Charleroi Job Center, 10 Paluso Drive, P.O. Box 210, Charleroi, PA 15022.

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Software Engineer sought by Message Machine Mftr in Chelmsford, MA. Must have MS in Prod. Sci & Tech, Compu. Sci or equiv & 2 yrs software experience. Respond by resume to: HR Dept, Biscom, Inc. 321 Billerica Rd, Chelmsford, MA 01824.

Software Engineer sought by Computer Consulting & S/ware Dvlpmt Co. in Iselin, NJ. Must have MS in Comp or Electronic Engg & 1 ½ yr exp dsgng, dvlpg & implmtg advanced s/ware applic in 3 tier C/S envrnmt using C/C++, Pro*C/C++, Softbench, Developer/2000, VC++, PowerBuilder, Shell, SED, AWK, PVCS, SQL, PL/SQL on MS DOS, Unix, Windows, HP-UX 9000/Sun Solaris 2.4 and dsgng & maintaining d/bases in Oracle 7.x, MS Access, Ms-Excel, dbase IV, and Ms-Outlook. Respond to: HR Dept, Laxmi Consulting Services, Inc, 200 Essex Turnpike #201, Iselin, NJ 08830.

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Opportunities are available for consultants nationwide in the following areas: SAP, Oracle, electronic commerce and object oriented technologies. Apply to Ref# 600, S. Rubenstein, Ernst & Young, 125 Chubb Ave., Lyndhurst, NJ 07071.

Systems Analyst sought by Insurance Co. in Philadelphia, PA. Must have Bach or equiv in Comp Sci, Math or Bus Admin & 2 yrs exp in dvlpmt & deployment of C/S applics using Oracle 7.3, PowerBuilder 5.3 & 6.5 and Win NT. Respond to: Elizabeth A. Stutz, Human Resources, Independence Blue Cross, 1901 Market St, Philadelphia, PA 19103-1480.

Programmer wanted by Database Marketing Co. in Lincoln, MA. Must have Bach in Comp Sci, Eng, Math or related discipline and 1 yr prgmg exp in Visual Basic, PostalSoft products. Respond to: HR Dept, Prevision Marketing, Inc, 55 Old Bedford Rd, Lincoln, MA 01773.

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Programmer. BS Mfg. Eng +1 yr prog. Exp. Software dev: update knowledge base for expert sys. In client server environment w/Java+ & C++. Use clips debugging apps; resolve specs. Analyze defects, test, specs & code reviews. Send resume: Cyber Object Corporation, 3050 Business Park Drive, Suite A-1, Norcross, Georgia 30071, attn. Cheryl Anderson

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Senior Software Engineer sought for job in Alpharetta, GA. Must have MS in Computer Science or related field. Respond to HR Dept, Compaq Computer Corp., 40 Old Bolton Road, OGO1-2/12V, Stow, MA 01775.

Job #8056358 - Programmer/ Analyst who will develop software systems, applying computer science, engineering and mathematical analysis, using Oracle, Pro*C, PL/SQL and Power Builder. Must have at least 1 year of experience with Oracle, Pro*C, PL/SQL and Power Builder. Will analyze software requirements and perform testing and user training after development. Master's degree in one of several limited fields required: engineering, mathematics, physics, computer science or chemistry $52,500 yr. 40 hrs/wk, 9:00 am-5:00 pm. Send resume, listing above job number to Mr. James Clarke, Manager, Uniontown Job Center, 32 Iowa Street, Uniontown, PA 15401.

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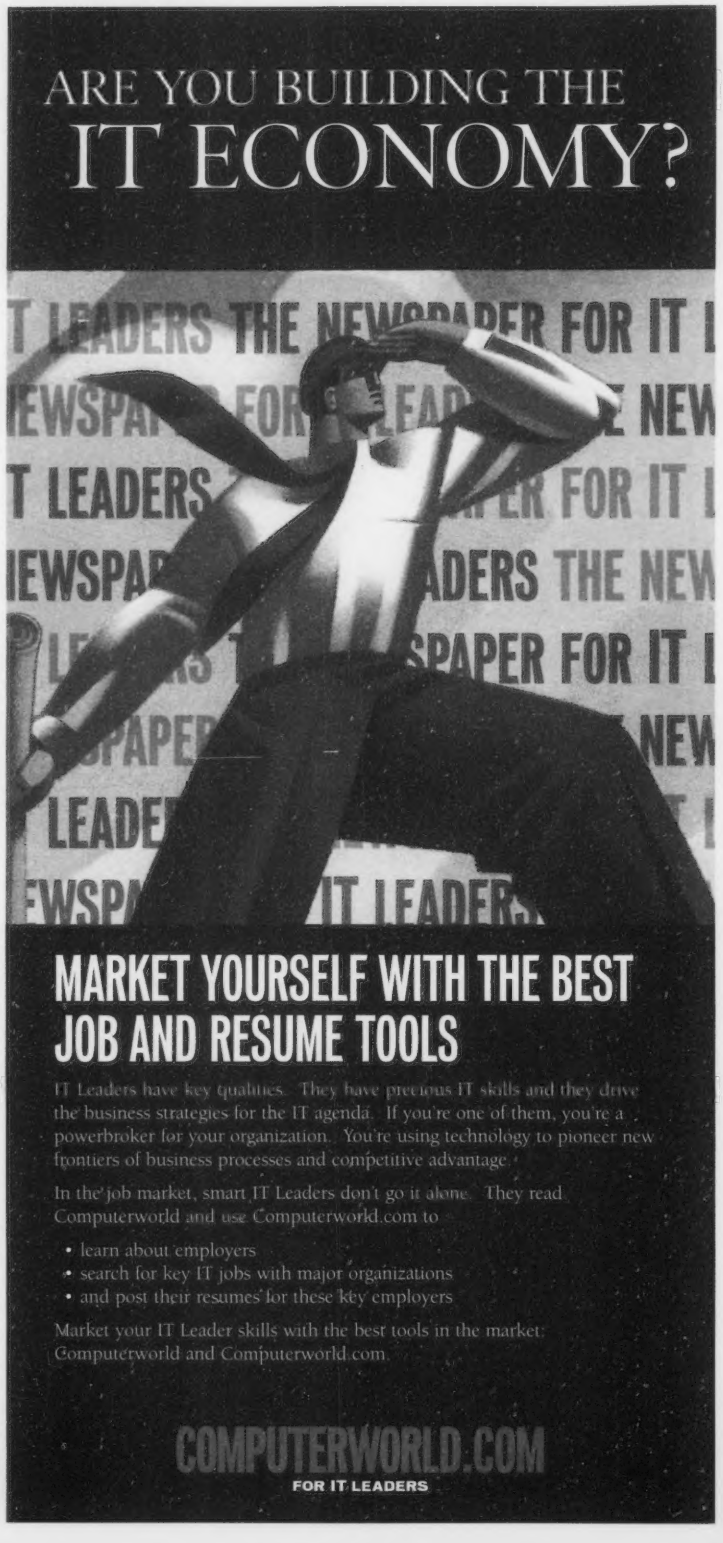
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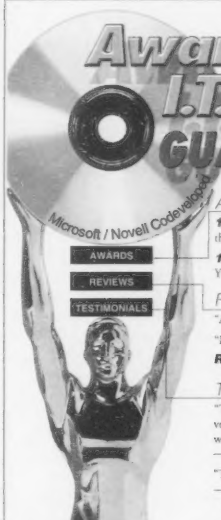
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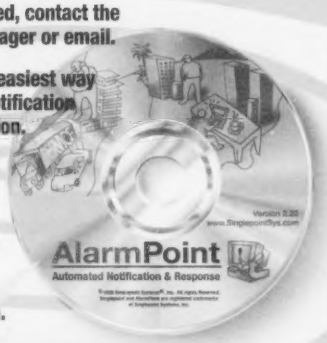
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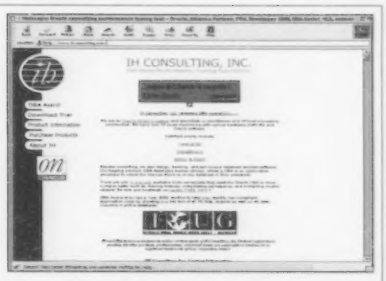
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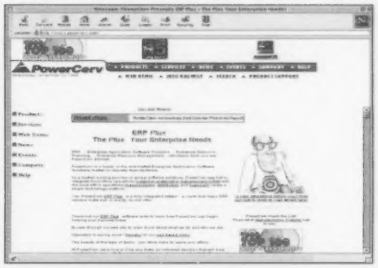
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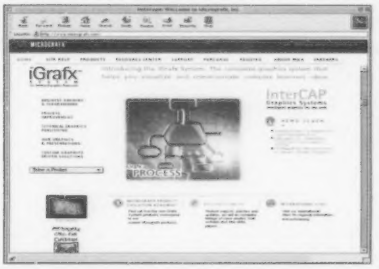
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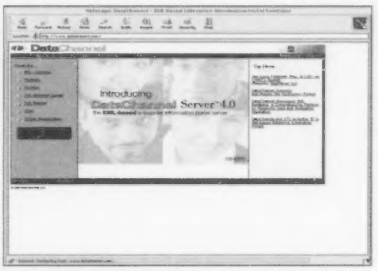
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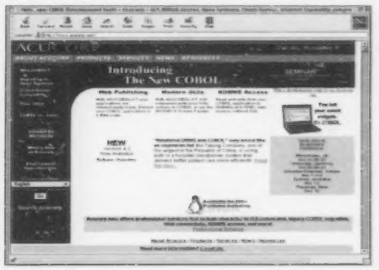
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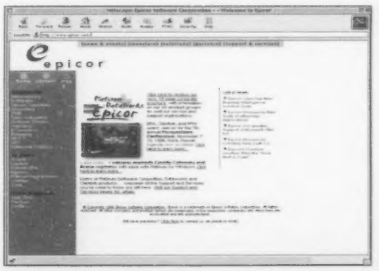
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Cambridge Technology Ptnrs	30.5

DOLLAR	
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Uniphase (H)	27.19
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Altera (H)	-5.3
Analog Devices	-5.2
Bell South	-4.9

DOLLAR	
Qualcomm (H)	-21.16
Lexmark International Group, Nc.	-5.63
Microsoft Corp.	-3.44
Altera (H)	-3.38
Analog Devices	-3.19
Gateway 2000 Inc. (H)	-3.19
Micron Technology	-3.00
Documentum	-2.50

UPS Delivers the Goods With IPO

Delivering Web-bought purchases boosts courier

BY JULIA KING

UNITED PARCEL SERVICE of America Inc.'s record-breaking initial public offering (IPO) on Nov. 10 coincided with the start of the year's busiest shipping season. But make no mistake: Analysts say the Atlanta-based package delivery company is bound for explosive growth — and profits — that will extend well beyond the holiday rush. This boom can be credited largely to the business UPS (NYSE:UPS) has found year-round, delivering everyday items such as cosmetics, clothes and vitamins ordered from Web sites.

INDUSTRY ALMANAC

Last year, UPS, which delivers 55% of all goods sold on the Internet, reported net income of $1.7 billion on revenue of $24.8 billion. As the world's largest package delivery company, with 330,000 employees in 200 countries, it delivers 12.5 million packages per day.

The IPO marked the first time in UPS's 92-year history that shares of the company were sold. Stock previously was reserved for managers and employees who received options as bonuses.

Investors charged at the opportunity to grab the 109.4 million shares — about 10% of the company — that UPS put up for sale. In its first day of trading, the stock leapt from an opening price of $50 to $70.31 at one point. It closed at $67.25, for a 35% one-day gain. The price remained in the mid- to high-$60s through the middle of last week.

"UPS is a long-term good bet," says Brian Eisenbarth, an analyst at Collins & Co. in Larkspur, Calif. Topping the list of reasons to invest, he says, is the company's excellent positioning vis-a-vis its chief competitors in the delivery business, including Memphis-based Federal Express Corp., a subsidiary of FDX Corp. (NYSE:FDX). Products purchased online are typically shipped in three days — the market UPS dominates, Eisenbarth says.

FedEx, by contrast, will most likely fare better in the business-to-business shipping arena, because most corporations already have accounts set up with the company for services such as overnight document delivery.

Following the IPO, UPS's stock valuation soared to just under $81 billion, well above FedEx's market capitalization of just under $13 billion.

Seasonal Spikes

Companies like UPS that support e-commerce with transportation, fulfillment and other real-world services will "definitely see seasonal spikes, like any sort of retailer," says Jay Kramb, an analyst at Robinson Humphrey Co. in Atlanta. But the long-term picture is rosy, he says, noting that "right now, we're really in the infancy of this whole electronic-commerce phenomenon."

E-commerce, which totaled approximately $80 billion last year, will grow to more than $3 trillion by 2003, according to projections by Forrester Research Inc. in Cambridge, Mass.

During this holiday season, Forrester expects online shoppers to spend as much as $4 billion, up from $1.5 billion last year. ◗

EXCH	52-WEEK	RANGE		NOV. 19 2 PM	WK NET CHANGE	WK PCT CHANGE
SOFTWARE UP 12.3%						
ASWX	77.00	12.50	Active Software (H)	73.88	11.88	19.2
ADBE	79.00	18.37	Adobe Systems Inc. (H)	76.19	3.06	4.2
ARBA	240.62	61.00	Ariba Inc. (H)	209.38	9.13	4.1
AZPN	68.12	8.12	Aspen Technology Inc.	16.75	0.56	3.7
ADSK	49.43	17.00	Autodesk Inc.	25.06	3.50	16.2
AVID	34.25	9.43	Avid Technology	11.13	-0.69	-5.8
BMCS	77.94	30.00	BMC Software Inc.	77.94	9.69	14.2
BOBJ	107.37	16.37	Business Objects S.A.	92.56	6.68	7.8
CDN	34.06	9.12	Cadence Design Systems	17.88	0.75	4.4
CBTSY	30.50	8.56	CBT Group Plc	25.81	3.06	13.5
CHKP	139.00	23.00	Checkpoint Software Techn. Ltd.	128.88	0.11	0.1
CTXS	109.62	26.50	Citrix Systems Inc. (N)	99.88	22.13	28.8
COGN	38.37	17.12	Cognus Inc. (H)	33.81	1.56	4.4
CA	66.50	32.12	Computer Associates Intern'l Inc.	66.50	5.13	8.4
CPWR	40.00	16.37	Compuware Corp.	37.13	6.75	22.2
DCTM	54.12	8.37	Documentum	33.00	-2.50	-7.0
ETYP	64.87	25.87	Electronics For Imaging	50.13	3.75	8.1
HNCS	66.25	13.75	Hnc Software (H)	67.13	14.25	29.8
HYSL	36.12	9.87	Hyperion Software	28.00	1.13	4.2
IDIC	60.75	12.43	IDX Systems	21.75	4.38	25.2
INFA	92.50	19.00	Informatica Corp.	73.25	1.63	2.3
IFMX	14.00	5.00	Informix Software Inc.	12.25	3.13	34.2
INTU	40.88	18.25	Intuit (H)	40.88	7.94	24.1
JNNY	59.00	26.43	Jack Henry Associates	38.69	3.19	9.0
JDEC	30.00	10.87	J.D. Edwards & Co.	29.06	1.09	3.9
LGTO	79.50	15.06	Legato Systems Inc. (H)	72.94	3.31	4.8
MACR	67.50	24.25	Macromedia Inc. (H)	63.44	6.88	12.2
MANU	17.37	5.25	Manugistics Group Inc.	16.06	2.19	15.8
MENT	75.06	7.50	Mentor Graphics	9.50	0.81	9.4
MSFT	100.75	54.56	Microsoft Corp.	85.25	3.44	3.9
NETA	67.68	10.06	Network Associates	28.19	6.50	30.0
NMH	68.00	33.62	Network Assocs Internat'l	61.81	0.19	0.2
NOVL	31.18	15.50	Novell Inc.	23.44	4.56	24.2
ORCL	77.00	21.00	Oracle Corp. (H)	77.00	11.25	17.1
PMTC	28.43	11.68	Parametric Technology Corp. (H)	26.56	6.69	33.6
PSFT	28.37	11.50	PeopleSoft Inc.	20.56	4.19	25.6
PTKR	53.75	23.00	Platinum	48.50	3.12	7.0
RATL	48.81	21.00	Rational Software Corp. (H)	48.81	4.75	10.8
RHAT	125.25	40.00	Red Hat Inc.	123.44	23.69	23.7
QSFT	63.31	20.50	Quest Software	58.50	3.38	5.2
SAPF	44.87	23.75	SAP AG	36.38	-1.06	-2.8
SCOR	29.00	2.25	Secure Computing Corp.	7.34	0.53	7.8
SE	46.43	17.93	Sterling Commerce Inc.	28.63	2.56	9.6
SGW	28.25	16.12	Sterling Software Inc. (H)	25.00	1.44	5.4
SDRC	23.43	8.81	Structural Dynamics Research	11.13	0.62	6.0
SYBS	7.00	5.37	Sybase Inc. (H)	17.31	1.13	6.9
SYMC	51.31	12.50	Symantec Corp.	46.13	1.06	2.3
SNPS	68.81	37.12	Synopsis (H)	65.44	0.75	1.1
SCTC	22.00	7.81	Systems & Computer Technology	15.75	1.25	8.6
TARG	17.87	6.87	The Baan Co. N.V.	13.50	3.13	30.2
VNTV	18.25	6.00	The Ventive Corp. (H)	16.75	3.69	28.2
TIBX	124.44	19.75	Tibco Software Inc. (H)	124.44	57.75	86.6
TSAI	51.00	24.18	Trans. Sys. Arch.	35.63	2.13	6.3
VRTS	165.25	25.81	Veritas Software Corp. (H)	165.25	31.31	27.5
WIND	36.25	11.25	Wind River Systems Inc. (H)	33.25	4.31	14.9
TELECOMMUNICATIONS CARRIERS UP 4.6%						
AT	59.81	49.00	Alltel Corp. (H)	57.63	5.69	6.9
ANDW	22.87	11.00	Andrew Corp.	14.94	0.88	6.2
T	64.12	40.37	AT&T	48.56	0.50	1.1
BCE	69.56	33.56	BCE Inc. (H)	69.56	3.69	5.6
BEL	69.50	50.62	Bell Atlantic	64.81	1.38	2.2
BLS	51.37	39.50	Bell South	42.81	-2.25	-4.9
BRW	31.31	12.00	Cincinnati Bell Inc. (H)	31.31	3.38	12.1
CMCSK	68.68	23.87	Comcast (H)	48.13	1.81	3.9
CQ	39.00	15.37	Comsat Corp.	19.69	1.25	6.8
COX	48.75	25.56	Cox Communications Inc. (H)	47.81	4.38	10.1
GSTRF	53.00	12.62	Globalstar Telecom. Ltd.	28.00	1.88	7.2
GTE	78.50	57.00	GTE Corp.	75.94	1.75	2.4
MCIC	70.87	19.18	MCI Communications (H)	68.50	10.25	17.6
SPOT	47.75	26.37	Panamsat (H)	46.69	6.06	14.9
QCOM	406.12	24.50	Qualcomm (H)	360.53	21.16	5.5
SBC	59.93	43.87	SBC Communications	51.00	0.31	0.6
FON	75.87	34.93	Sprint Corp. (FI)	75.18	1.75	2.4
TDS	128.00	48.00	Telephone and Data Systems (H)	126.00	5.25	4.3
TNI	47.75	12.00	Transnation Network Services (H)	45.81	-0.81	-1.7
USW	66.56	31.50	US West (H)	66.13	2.31	3.6
VIA	54.25	31.68	Viacom (H)	52.50	3.56	7.3
WCII	64.43	25.50	Winstar Communications Inc.	54.63	3.38	6.6
WCOM	96.75	54.31	MCI Worldcom Inc.	91.06	4.13	4.7
SERVICES UP 6.4%						
ACXM	31.25	14.56	Acxiom Corp.	18.06	1.25	7.4
ACS	53.00	31.75	Affiliated Computer Servs	38.56	0.19	0.5
AMSY	40.25	10.75	American Mgt. Systems	30.50	1.38	4.7
AUD	51.25	36.25	Automatic Data Processing (H)	50.19	0.31	0.6
BSYS	60.87	41.37	Brays Group Inc.	56.00	1.63	3.0
CATP	32.25	10.62	Cambridge Technology Ptnrs	16.31	3.81	30.5
CCN	40.50	16.62	Ceridian Corp.	22.19	1.38	6.6
CBR	29.56	13.75	Ciber Inc.	23.00	0.38	1.7
CDO	30.87	10.75	Comdisco	24.44	2.88	13.3
CHRZ	30.00	9.25	Computer Horizons Corp.	15.00	0.50	3.4
CSC	54.37	32.37	Computer Sciences	53.63	2.31	4.5
DST	70.25	49.43	Dst Systems Inc.	61.13	-0.56	-0.9
EDS	67.56	37.68	Electronic Data Systems (H)	63.44	0.13	0.2
FDC	51.50	24.56	First Data Group	44.50	0.50	1.1
FISV	40.75	24.12	Fiserv	35.50	1.31	3.8
IT	25.75	9.56	Gartner Group Inc.	12.38	1.00	8.8
KFA	43.62	17.25	Keane	28.44	0.19	0.7
NDC	55.25	21.75	National Data	36.38	9.38	34.7
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TECD	44.68	14.50	Tech Data	26.94	1.94	7.8
TSNF	41.00	17.00	TenFold Corp.	20.25	0.25	0.9
TSS	28.25	14.12	Total System Services, Inc.	17.50	-0.25	-1.4
TSAI	51.00	24.18	Transaction Sys. Architects	30.63	2.13	6.3
NETWORK UP 11.4%						
COMS	51.12	20.00	3Com Corp.	42.44	9.19	27.6
ADCT	56.00	25.93	ADC Telecommunications Inc. (H)	55.00	6.72	13.9
ANTC	60.25	14.62	Antec	56.63	9.63	18.0
BNYN	19.37	4.50	Banyan Systems Inc.	13.75	1.13	8.9
CSI	24.75	7.18	Cabletron Systems (H)	23.19	1.69	7.8
CNEBF	0.75	0.50	Cut Net Enterprises	4.19	0.00	0.0
CSCO	88.00	34.62	Cisco Systems Inc. (H)	87.81	5.00	6.0
ECIL	45.00	23.75	ECI Telecom	28.19	0.06	0.2
ENTU	46.50	16.87	Entrust Technologies Inc. (H)	42.94	6.44	17.6
HRS	40.62	18.25	Harris Corp.	20.69	0.69	0.0
GMH	88.00	33.62	Hughes Electronics/GM	81.81	3.19	4.2
ERICY	57.43	20.50	L. M. Ericsson (H)	48.88	4.19	9.4
JNPR	334.50	90.12	Juniper Networks Inc. (H)	310.63	27.69	9.8
LU	80.87	42.25	Lucent Technologies (H)	78.81	5.56	7.6
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PCTL	11.00	3.75	Picturetel	4.44	0.38	9.2
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USW	66.56	51.50	US West (H)	66.13	2.31	3.6
VRLK	6.29	1.81	Verilink	2.88	0.63	27.8
WSTL	11.18	3.81	Westell Technology Inc.	10.44	2.31	28.5
SEMICONDUCTORS, CHIPS & EQUIPMENT UP 2.7%						
ADPT	53.43	15.87	Adaptec (H)	51.38	1.38	2.8
AMD	33.00	14.56	Advanced Micro Devices	27.00	0.38	1.4
ALTR	68.56	23.87	Altera (H)	60.00	3.38	5.3
ADI	65.00	19.75	Analog Devices	58.56	3.19	5.2
AMAT	113.25	26.19	Applied Materials (H)	108.88	2.63	2.5
ASML	98.25	26.00	ASM Lithography Holding (H)	85.50	2.88	3.5
FCS	32.00	19.50	Fairchild Semiconductor Corp.	27.31	1.25	4.8
HRS	40.62	18.25	Harris Corp.	20.69	0.00	0.0
INTC	89.50	50.12	Intel Corp.	80.00	4.69	6.2
KLAC	97.78	32.43	Kla Instruments (H)	92.56	9.06	10.1
LLTC	79.63	34.43	Linear Technology (H)	77.00	2.25	3.0
LSI	66.93	15.18	LSI Logic (H)	65.75	1.69	2.6
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MU	85.00	34.25	Micron Technology	69.50	3.00	4.1
MOT	124.25	55.25	Motorola Inc. (H)	122.75	9.56	8.4
NSM	40.69	8.87	National Semiconductor (H)	40.69	6.44	18.8
STM	119.19	31.87	SGS-Thomson Microelectronics (H)	114.38	9.13	8.7
SLR	90.00	31.50	Solectron Corp.	86.44	0.25	0.3
TER	50.68	15.50	Teradyne (H)	49.13	0.63	1.3
TXN	102.50	35.00	Texas Instruments Inc.	97.00	2.00	2.0
JDSU	275.00	24.69	Uniphase (H)	215.00	27.19	14.5
VTSS	55.37	16.50	Vitesse Semiconductor Corp. (H)	51.00	1.19	2.3
XLNX	95.18	24.93	Xilinx	92.00	2.06	2.1
COMPUTER SYSTEMS UP 9.6%						
AAPL	97.71	31.62	Apple Computer Inc.	91.31	1.69	1.9
ASPX	12.31	2.75	Auspex Systems	9.50	1.69	21.6
BFOS	10.68	3.28	Be Inc.	12.31	0.19	1.5
CPQ	51.25	18.00	Compaq Computer Corp.	28.88	5.25	24.3
DELL	55.00	29.87	Dell Computer Corp.	41.19	0.50	1.2
GTW	84.00	24.62	Gateway 2000 Inc. (H)	77.06	3.19	4.0
HWP	118.43	57.68	Hewlett-Packard Co.	94.00	18.63	24.7
HIT	124.81	55.50	Hitachi Ltd. (H)	124.63	1.13	0.9
IBM	134.18	78.81	IBM	104.13	9.44	10.0
MUEI	24.00	9.00	Micron	11.00	0.62	6.0
MOT	124.25	55.25	Motorola (H)	122.75	9.56	8.4
NATI	35.43	17.18	National Instruments Corp.	30.38	0.69	3.0
NCR	55.75	26.68	NCR	39.25	-0.50	-1.5
NIPNY	114.37	41.00	NEC (H)	111.25	7.38	0.9
PRCM	25.12	3.43	Procom Tech Inc. (H)	18.56	7.94	74.7
SGI	20.87	6.87	Silicon Graphics Inc. (L)	8.44	0.69	8.9
SNE	181.50	65.50	Sony (H)	176.38	0.44	0.2
SUNW	101.31	33.09	Sun Microsystems (H)	279.00	10.50	10.3
TRCD	7.25	0.50	Tricord Systems	6.19	0.81	11.6
UIS	49.68	20.93	Unisys	29.13	3.94	15.6
INTERNET UP 12.6%						
AMZN	110.62	25.25	Amazon.com Inc.	78.56	2.75	3.7
AOL	175.50	38.25	America Online	158.94	12.63	8.6
AMIM	99.00	24.12	eMotion Corp.	51.50	8.13	18.7
BAMB	27.75	8.93	Bamboo.com	16.44	1.25	8.2
CKFR	69.12	13.62	Checkfree	60.94	12.44	25.6
CYCH	24.87	6.68	Cybercash Inc.	12.13	2.50	26.0
EDFY	17.50	3.81	Edify Corp.	12.25	0.00	0.0
EBAY	234.00	41.75	eBay Inc.	147.38	11.69	8.6
ETYS	86.00	28.12	eToys Inc.	57.44	6.19	10.1
EGRP	72.25	5.62	ETrade Group Inc.	35.75	1.88	5.5
GEEK	100.00	26.12	Infoseek	37.88	4.81	14.6
LCOS	72.68	27.25	Lycos Inc.	55.00	2.44	4.2
OMKT	36.38	6.75	Open Market Inc. (H)	36.38	15.38	73.2
OTEX	42.50	9.50	Open Text Corp.	14.34	0.09	0.6
PCLN	165.00	50.50	Priceline.com Inc.	67.88	10.88	19.1
PRGY	50.62	14.00	Prodigy Communications	29.25	6.25	27.2
PSIX	72.75	16.50	PSINet Inc.	47.31	1.38	2.8
RSAS	43.37	11.00	Security Dynamics (H)	41.63	1.38	3.4
SPYG	33.75	8.62	Spyglass Inc.	29.69	0.56	1.9
WINK	55.25	21.75	Wink Communications Inc.	45.75	3.25	7.6
YHOO	244.00	89.25	Yahoo Inc.	212.94	17.19	8.8
STORAGE & PERIPHERALS UP 7.7%						
ADPT	53.43	15.87	Adaptec Inc. (H)	51.38	1.38	2.8
APCC	27.75	13.12	American Power Conversion	27.25	2.31	9.3
CANNY	57.62	19.25	Canon Inc.	50.50	2.19	4.7
DRD	39.87	20.75	Dataskill Inc.	24.31	0.75	3.0
EK	80.37	60.81	Eastman Kodak Co.	65.56	0.88	1.3
EMC	90.37	34.00	EMC (H)	89.50	8.63	10.7
IOM	10.18	2.87	Iomega	4.31	0.44	11.3
MXTR	21.75	4.25	Maxtor Corp.	7.06	0.25	3.7
NTAP	121.00	33.68	Network Appliance Inc. (H)	116.06	24.69	27.0
LXK	104.00	37.31	Lexmark International Group, Nc.	81.81	-5.63	-6.4
SFG	44.25	25.12	Seagate Technology	38.69	2.38	6.5
STK	61.62	14.25	Storage Technology	19.19	2.56	15.4
TEK	39.37	17.56	Tektronix	33.81	1.31	4.0
XRX	67.93	22.75	Xerox	30.13	5.06	20.2

KEY: **(H)** = New annual high reached in period
(L) = New annual low reached in period

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Failed Merger

medicine and chairman of the faculty association at the University of California at San Francisco.

The issues included the following problems:

- The IT costs of the merger, initially estimated at $25 million, rose to $95 million within a year and to $126 million last August — more than five times the amount of original estimates, according to the report.
- The figures used to calculate costs weren't realistic and excluded any monies for fixing year 2000 problems, a former CIO said.
- The board of directors failed to consult with end users or clinicians when planning the merger, according to faculty.

Among the casualties were as many as 2,000 jobs and a San Francisco emergency care clinic that closed last week because of severe financial losses (see chart).

Hospital executives couldn't be reached for comment late last week.

The $440 million 1997 merger between the hospitals of Stanford University in Palo Alto, Calif., and UCSF was intended to consolidate administration and reduce operating costs at four San Francisco Bay area teaching hospitals, two affiliated with each university.

Initial projections for the merger predicted profits of $140 million in two years, compared with a $93 million loss should the hospitals continue to operate separately. But UCSF Stanford Health Care (UCSH) soon faced huge deficits and announced plans to lay off employees.

By March, UCSH was calling for a $170 million reduction in expenses over 17 months. First-quarter results showed an operating loss of $10.7 million.

The death knell came in August, when state auditor Kurt Sjoberg charged that the new entity still faced significant challenges and had actually incurred costs where savings had been expected.

UCSH CIO Brian May declined to comment on the issue. But Larry Blevins, May's predecessor, said that long before he himself arrived in late 1997, the merger was marked for failure. Blevins said IT cost estimates used in projecting merger costs were based on information that didn't reflect the hard facts of day-to-day IT operations, nor did they take into account the need to address Y2K issues at both universities.

Blevins said the universities' academic and IT structures were highly diverse, functioning as "islands of information" to the point that it probably would have been impossible to get complete and accurate pictures of operating costs to build a merger cost projection for IT. Blevins left UCSH for another hospital IT position in the summer of 1998 because he saw no firm business plan for IT and didn't think the merger was going to work.

Gold added that the UCSH board of directors took a "we-know-best" attitude. He said if the board had consulted medical faculty and staff, the actual users of both clinical and administrative IT, UCSH would have had a much clearer picture of the task ahead.

For now, UCSH has said the IT upgrades and installations it implemented at both universities will remain in service for at least six months, while Stanford and UCSF extricate themselves from the merger.

JUST THE FACTS

Fallout From Failed Merger

Closed: Emergency care facilities at Mount Zion Hospital in San Francisco

Jobs lost: Up to 2,000

Cause: Failure to accurately estimate IT costs prior to the merger contributed to red ink, where profits had been expected

Auditor's report: Available at *www.bsa.ca.gov/bsa/* (report #99128)

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CRM

tems that automate marketing, sales and service, not back-office operations or manufacturing.

But at a CRM conference here last week, experienced users said the costs and complexity they have had to deal with aren't that different from what companies face when they install enterprise resource planning (ERP) systems.

"It's been a long journey, and we're nowhere near completion," said J. Pruitt Layton, CRM program manager at AlliedSignal Aerospace in Phoenix. Just getting the group's business units "to understand why they need to use the software" continues to be a big challenge, he added.

Sales on Rise

CRM applications are emerging as a key technology for companies that want to use the software to be more responsive to customers and to increase revenues by better targeting their marketing campaigns and sales efforts. Boston-based AMR Research Inc. predicts that worldwide CRM sales will rocket up 60% this year, growing from $2.3 billion last year to $3.7 billion.

But tying together different applications that handle a piece of the CRM puzzle is a daunting job, said users at the conference, which was run by re-engineering guru Michael Hammer's Cambridge, Mass.-based consulting company.

And then there's the business impact. Layton and other users said wrenching changes in business processes are often needed to bring together divisions that are used to doing things their own way. Companies also have to be careful not to overwhelm workers with new technology, they added.

San Francisco-based Charles Schwab & Co. installed Siebel Systems Inc.'s sales force automation software in 1995 and has since added a mix of data analysis, reporting and marketing tools. The applications have helped the brokerage double both its customers and its assets, said Lonny Nathanson, director of sales and marketing systems at Schwab.

But the internal changes that Schwab had to make were "painful," Nathanson said. And the company is still trying to better integrate its back-office systems and data marts to give workers a more complete view of individual customers.

"None of this was easy, both for our customers and our employees," Nathanson said. "You want everything to happen overnight, but it doesn't."

In 1994 and 1996, AlliedSignal Aerospace rolled out sales applications that failed to win over many end users, Layton said. Now, it's trying again with a more integrated CRM system from Siebel, in San Mateo, Calif. The software went live in September with about 600 users and could be put in the hands of 5,000 employees in the next couple of years.

But AlliedSignal has turned on only about 20% of what it bought from Siebel in order to avoid giving the users more than they can handle at first, Layton said. The company is also trying to negotiate an enterprise license with Siebel so purchases no longer have to be made on a per-user basis — a budget-busting arrangement that could force the aerospace unit to "stagnate at 1,000 users," he said.

AT&T limited the scope of its CRM project in Texas to combined local and long-distance phone service for consumers in order to get the system up and running in just 15 months.

Even so, integrating a mix of front-office, data analysis and call-center applications in time for the August go-live date wasn't easy, said Surendra Saboo, a vice president of operations at AT&T. And now, he added, the CRM system "is like a big machine that needs to be oiled and kept alive."

JUST THE FACTS

Out in the Front Office

The basics on installing customer relationship management systems

What CRM is: A diverse set of applications and data analysis tools that automate field sales and service operations, call centers, the development of marketing campaigns and online product configuration, price quoting and sales.

Technical challenges: Multiple applications, databases and data marts often have to be integrated to produce a complete CRM system, which then has to be tied to ERP systems and back-office applications.

Business challenges: Changing the way end users do their jobs and getting them to accept the software isn't always easy. Business units also may have to be convinced to give up some autonomy.

CRM Needs Project Managers

Big CRM projects deserve a dedicated program management team that cuts across multiple business units, just like their ERP cousins do, said users at last week's Hammer and Co. conference.

Otherwise, they added, a CRM project could get bogged down by corporate infighting.

"Sometimes you have to make the right business decision, and that's not always the best decision for sales or service on its own," said Russell Morgan, an AT&T vice president who was involved in developing the CRM system for the company's local phone unit in Texas.

Morgan said AT&T had a barebones team at the top, consisting of its own project manager and a representative from New York-based Deloitte Consulting, which helped install the system.

On the other hand, AlliedSignal Aerospace has put together a "program office" that includes managers from each of its operating units, said J. Pruitt Layton, who's managing the Phoenix-based operation's CRM project.

The company also put together a steering committee of higher-level executives to help with strategic planning.

– *Craig Stedman*

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FRANK HAYES/FRANKLY SPEAKING

Carve 'em up

AH, THANKSGIVING! Time for that annual ritual in which we remember all the things we have to be thankful for. There's good health and treasured friends, our families and communities. There's the prosperity of a strong economy and the bounty of the land. And — in the best American tradition — there are turkeys. Lots and lots of turkeys. Sure, we could grumble over ungrateful users, complain about clueless managers and snarl at vendors whose products deliver too little, too late. But for now, let's just join hands and bow our heads. For these things, we give thanks . . .

Y2K. If not for year 2000, we'd never have found all those old computers squirreled away in every department and branch. Or known about our badly designed sprinkler systems and electronic door locks. Or met our new best friends, the Y2K consultants. Or started working so closely with our suppliers and customers, or turned up potential problems that could bite us even without Y2K. Hey, is this millennium bug great, or what?

ERP systems. Which introduced us to our *other* new best friends, the ERP consultants. We're thankful most of our ERP projects haven't yet broken down and cost us millions in sales and profits. But if they do, we'll still be thankful — that our CEOs will never take IT's impact on the business for granted again.

Windows 2000. It's the party game for the new millennium. Will it ever arrive? What features will still be in it? Which can't-live-without-'em applications will break when we install it? Thank heavens for this relaxing diversion from Y2K fixes and e-commerce installations.

Accounting changes. Thanks to a new accounting standard called SOP 98-1, bean counters will soon be screaming at us to limit our budgets to bug fixes and maintenance ("so we can write it off") or concentrate on buying or building new systems ("so we can capitalize it"), depending on what will make it easier to cook the books. Who wouldn't be thankful for that kind of helpful, results-oriented IT advice?

Palm handhelds and Web-enabled cell phones, and gadget-crazy salespeople who insist on using them. Thank goodness these new devices were never designed for secure access to corporate data. And thanks in particular for the chance to support them — especially from a thousand miles away, in a lightning storm that murders wireless networking, while important customers stand around waiting for the little buggers to work.

Politicians and bureaucrats who dither endlessly over strong encryption, Internet sales taxes and e-commerce regulation. But we'd be *really* thankful if they'd just make up their minds . . .

Let's give thanks for turkeys. Lots and lots of turkeys.



Users who know what they want. Exactly what they want. By brand name. Whether or not it will work with what they've got. Whether it will break critical applications or clog up networks, whether it's the best business fit or the most cost-effective technology. We're thankful they keep us running in circles, trying to make it all work — after all, without all that running, when would we find time to exercise?

Executives who dismiss IT people as business know-nothings. We're almost as thankful for them as for vendors who believe we're gullible, users who are convinced we're nerds, and family and friends who think we're fools for working in corporate IT when everybody else is getting rich at dot-com start-ups.

And finally, we're thankful for those few remaining IT people who still think it's only about technology — not users, not business effectiveness, just shuffling bits and wires. Thank heavens *somebody* is upholding tradition — no matter what the cost. ◗

Hayes, Computerworld's staff columnist, has covered IT for 20 years. His e-mail address is frank_hayes@computerworld.com.

SHARK TANK

SO THIS GUY has to move his company's e-mail from an outsourcer to in-house Microsoft Exchange. The management-imposed timetable? Somewhere between preposterous and you-gotta-be-kidding. But the guy grits his teeth and goes for it. No time for parallel systems; IT works without a safety net. And pulls a Walenda. The server crashes, takes down the company for a full day. In comes a fix-it team, whose leader is a pilot fish. He can't believe the IT guy tried to make the original schedule. Does the brass appreciate the gutsy effort? Hah. "They want his head on a platter."

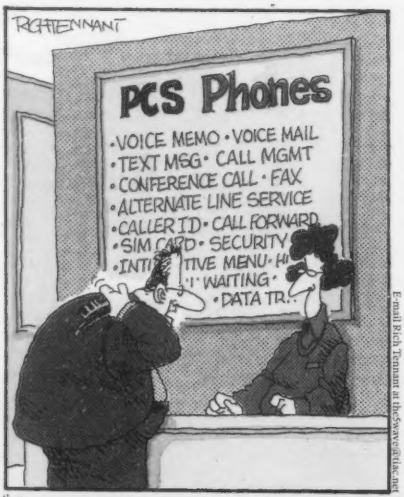
BOSTON. LAST WEEK. CRM conference. Superconsultant Michael Hammer, whose outfit cosponsored the event, was expounding on the need for a complex blend of systems and apps to create a unified marketing, sales and customer service system, blah blah blah. So, Hammer asked, "How do you achieve all that?" "Consulting!" somebody shouted out. Hammer laughed. All the way to the bank.

AND THEN THERE WAS the new sys admin at a little engineering operation. He pointed out that there were more than 20 people using Access 97 – and the company owned only three copies. After the sys admin ran some numbers on obtaining more licenses, "my boss [an accountant] asked me to contact Bill Gates and see if we could get a better deal on such large volume," the pilot fish says. "Seriously."

WITH ITS NEW iPaq, Compaq is just dying to make life easier for PC administrators. For one thing, each iPaq will have a one-year life cycle guarantee, during which Compaq won't change configurations or roll in new features. So a pilot fish reads the fine print on the introductory models' spec sheets and finds: "Content is subject to change without notice." Do tell, Compaq.

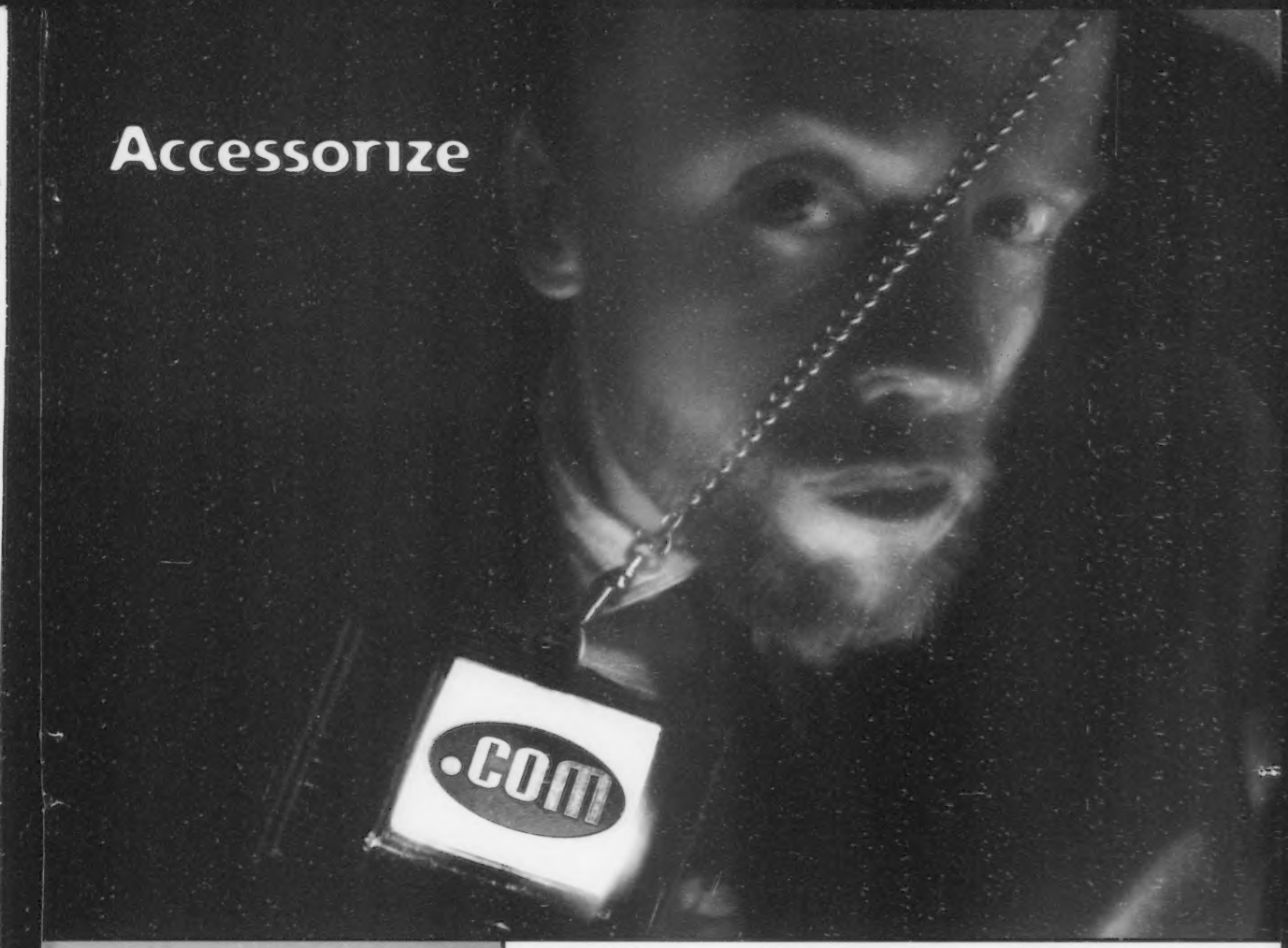
There's blood in the ERP waters. The Shark keeps hearing about disasters that make Hershey's problems look like a chocolate kiss. And if you risk your job to blow the whistle, he'll give you . . . a T-shirt. But it's a very *cool* T-shirt, and jobs are a dime a dozen. So let 'er rip: **sharky@computerworld.com.** For a daily bucket of IT guts, whip over to *computerworld.com/sharky.*

The 5th Wave



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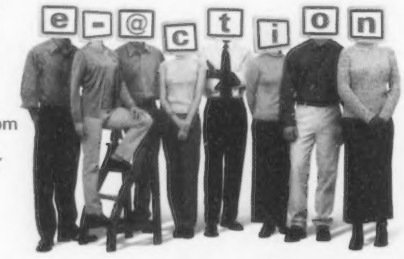
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